Petroleum review

DECEMBER 2000

IP Awards 2000

- And the winners are...

Asia-Pacific survey (Part 2)

- Stepping on the gas

Shipping

- Setting sights on safety

E-commerce

- Is the industry really managing it?

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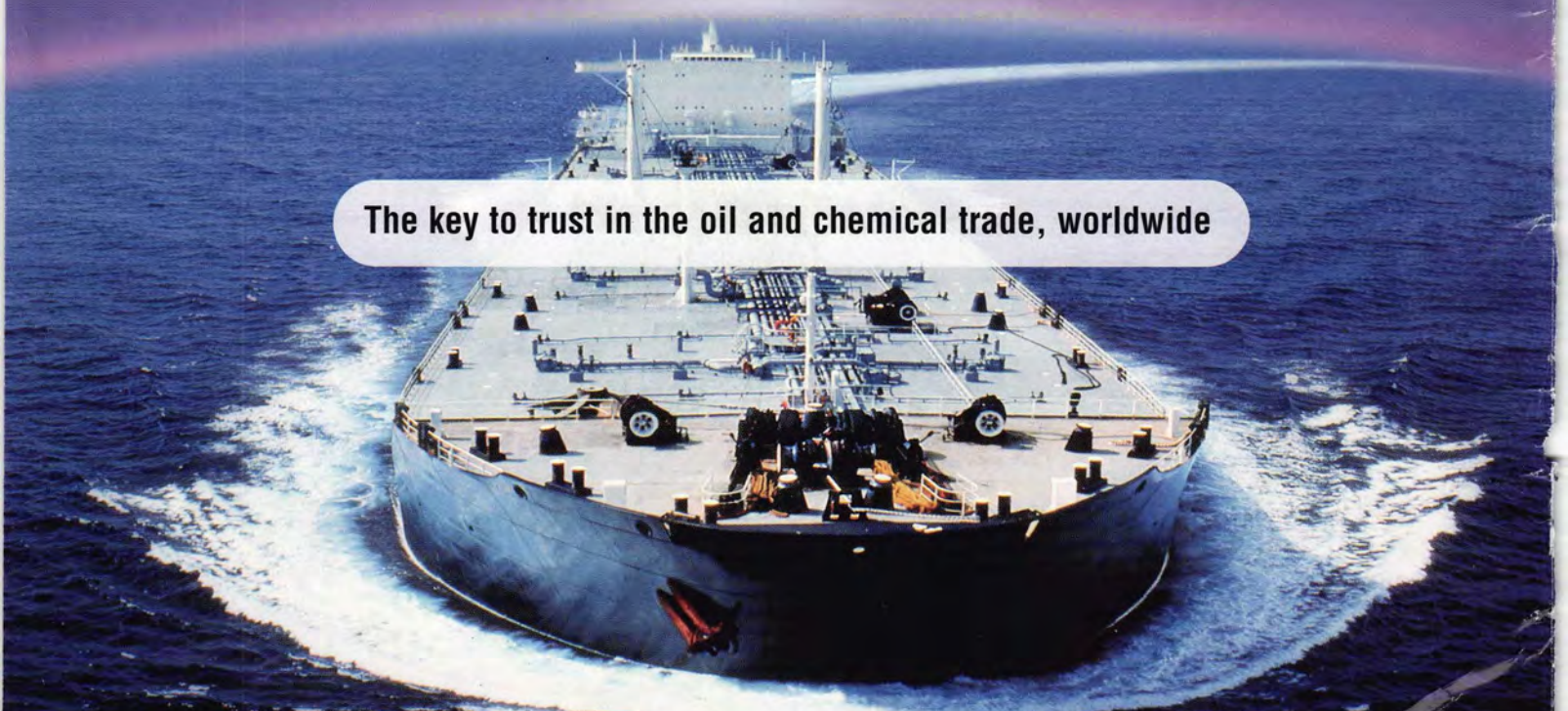

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ABBREVIATIONS

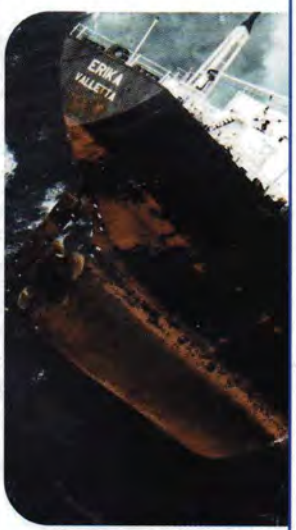
The following are used throughout *Petroleum Review*:

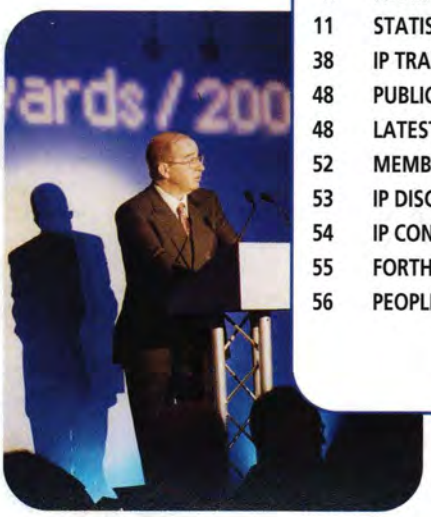
mn	= million (10^6)	kW	= kilowatts (10^3)
bn	= billion (10^9)	MW	= megawatts (10^6)
tn	= trillion (10^{12})	GW	= gigawatts (10^9)
cf	= cubic feet	kWh	= kilowatt hour
cm	= cubic metres	km	= kilometre
boe	= barrels of oil equivalent	sq km	= square kilometres
t/y	= tonnes/year	b/d	= barrels/day
		t/d	= tonnes/day

No single letter abbreviations are used. Abbreviations go together eg. 100mn cf/y = 100 million cubic feet per year.

Front cover: Shipping industry now booming but safety fears remain

inside...





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ROUNDUP From the Editor

Recognising excellence

On 13 November, before an audience of 350 guests at the Savoy, the first seven prizewiners received their IP Awards 2000 on behalf of the industry teams they represented. There were no less than 80 entries for the seven IP Awards, so the prizewinners' achievements are very substantial indeed. Full coverage of the event and the prizewinners is on p29.

The basis of the awards is performance excellence. Most people who join the oil and gas industry are attracted to it because it is so obviously based on sound science and good engineering. The new IP Awards recognise some of the industry's recent achievements and are set to become an annual feature in the oil and gas industry calendar.

At the same time as the IP was making awards for excellence, the latest round in the negotiations about the application of the Kyoto Protocol were starting in The Hague. The oil and gas industry now represents a key element in contemporary society and as such it has generally embraced the precautionary principle in relation to carbon dioxide (CO_2) emissions. The precautionary principle is, however, just that – precautionary.

The world's politicians have the unenviable task of trying to reconcile the understandable enthusiasm of the environmentalists for immediate action with an appreciation of the costs and practicalities of the various remedies proposed.

In terms of vehicle-based emissions, the oil industry has a very good record to relate. In virtually all developed countries specific emissions have fallen dramatically. The phasing out of leaded gasolines, the introduction of low sulfur gasolines and diesels, have combined with vehicle improvements to produce cleaner and more fuel efficient travel for millions of vehicle users. It is a good record and it is a great pity there isn't more public recognition of the progress made.

The industry is understandably reluctant to draw attention to declining sales of products. However, it is worth asking how many environmentalists or members of the public are aware of recent gasoline consumption trends.

The facts are actually rather inconvenient. In the UK, petrol consumption is now nearly 10% below its 1990 level. It is very hard to produce more carbon dioxide by burning less fuel – but is there any recognition of this? It is not just a UK phenomena. Latest IEA figures show gasoline demand falling in Canada, Korea, France, Germany, Italy and the UK. Even the US managed only the most marginal increase in gasoline demand.

The explanation of more travel with less fuel is efficiency – good science and good engineering in practice. Part of the explanation is also the increased use of diesel and the increasing proportion of diesel-powered vehicles. Diesel vehicles are significantly more fuel efficient than petrol-powered ones. However, the UK Chancellor has just given reduced vehicle excise taxes to the owners of small petrol-powered cars (at least half of which are second cars in affluent families) but no incentive to the owners of larger engined diesel-powered cars. The inconvenient fact is that the diesels are much more fuel efficient and their emissions per mile travelled are lower.

Almost a year ago, e-business burst on to the oil scene. Sites and business models proliferated. The latest count is around 180. We hope to include a site listing next month. The great problem was, and still is, that only a limited number of sites have really flourished.

A number of key factors have inhibited activity. First, it has taken some time for sites to effectively replicate business systems and even longer to integrate these with existing computer systems. Second, there has been a widespread reluctance for sellers to be presented in a way which commoditises their products and dilutes their 'unique selling proposition.' Finally, everyone seems to have underestimated the time needed to develop effective sites, change business systems and, perhaps most important of all, to convince potential users within companies that it was in their interest to move to a new way of doing things.

We have now reached the point when two major industry sites are in operation – Petrocosm and TradeRanger – plus a number of sites covering specific topics: bunkers, shipping, acreage, etc. The question for the next few months is which sites will prosper and which will disappear. A number of articles (see pp18–28) describe the current status of e-business in the oil and gas industry.

Would it be a safe bet that a year from now, 18 sites are more likely than the current 180?

Chris Skrebowski

eWorld

Insurance group Gerling at Lloyd's has launched OilSure – an Internet-based trading system for oil cargo insurance (**www.oilsure.com**). The portal provides global access for quotations and cover, 24 hours a day, 365 days a year. It is centred around a highly sophisticated rating engine that automatically compares risk factors such as vessel tonnage, type and age, voyage area, product carried and load/discharge methods to arrive at a premium.

Cimage Enterprise Systems and eRoom Technology have joined forces to create a Virtual Project Office that is claimed to reduce the time taken to select suppliers, manage, roll out and handover a project. The whole process from inviting tenders to exchanging contracts is conducted via the Internet. For further information, visit either **www.cimage.com** or **www.eroom.com**

The latest Lloyd's Register (LR) type approved products listing can now be accessed free of charge online at **www.lr.org** The system allows interrogation of the database containing the LR list of approved mechanical, control, electrical and statutory products, including those complying with the Marine Equipment Directive. Data is updated at regular intervals.

www.e-volve.org.uk is a new e-portal that is claimed to provide the opportunity to share ideas, innovations, resources, reports and information on sustainable development.

www.wellfound.org describes a revolutionary system that uses electrostatic field measurement and remote sensing to enhance the prognosis available from geoscience survey for onshore hydrocarbon deposits. To date, the system has only been available for use in the Ukraine and Eastern Europe.

Calling all IP website surfers!

The redevelopment of the IP website (**www.petroleum.co.uk**) is now well under way. We are looking for volunteers to test the new site prior to its launch during IP Week in February. Can you help?

If you are interested in testing the new-look site and providing feedback, please contact us at e: **betatester@petroleum.co.uk** Please include details of your full name, occupation and organisation (if applicable). *(See ad on p53)*

In Brief

UK

TotalFinaElf is planning to sell its *47.5% stake in the undeveloped Eocene oil discovery in block 21/27 in the central North Sea, together with its interests in blocks 21/27b and 21/27c which contain the Pilot and Harbour discoveries.*

Burlington Resources is understood to *be selling its 25% stake in block 53/8 in the southern North Sea. It is also disposing of its 30% interest in block 73/16 on the SW approaches, as well as its interests in blocks 73/17, 73/18, 73/19 and 72/20.*

Europe

The South African oil and gas explorer *Zarara Energy has negotiated a 25% share in the Kandamis gas project located near Istanbul in Turkey's Thrace Basin.*

ExxonMobil is reportedly in discussions *with Statoil about a possible $163mn development of its Sigyn gas and condensates field in block 16/7. A plan for the field will be submitted to the Norwegian Government this winter. It is proposed to develop the field as a satellite to the Sleipner A platform. The field could be onstream by 4Q2002. Estimated reserves are put at 68mn barrels of oil equivalent.*

EuroGas has announced that it is *entering into a joint operation agreement with Polish Oil and Gas Company (POGC), the Polish national oil company. POGC is to become the operator in a project to explore and develop oil and gas in south eastern Poland.*

Norsk Hydro is reported to be *upgrading its estimated recoverable reserves for the North Sea Troll oil field by 105mn barrels to 1.33bn barrels, following the successful use of enhanced recovery technology.*

Aker Maritime is selling its seismic *business to Compagnie Generale de Geophysique of France for $118mn.*

Aker Verdal is to build the 17,500- *tonne steel jacket for Norsk Hydro's Grane project in the North Sea. Fabrication is slated to complete in March 2003. Field reserves are put at 700mn barrels of recoverable oil. Grane is expected to reach peak production of 214,000 b/d in 2005.*

Venezuela – investors once bitten, twice shy?

Wood Mackenzie's latest *Latin America (Atlantic) Upstream Report* reviews how foreign companies have fared in the Venezuela upstream sector, an area whose reputation as a good place to do business has been severely dented over the past few years as many companies have struggled to make returns on what were originally reckoned to be flagship investments.

The report takes a particularly close look at how the country's Third Round of Operating Services Agreements (the so-called Marginal Fields) have fared. In June 1997, PdVSA awarded rights to 18 blocks and, despite the backdrop of a harsh tax regime, some companies bid very high signature bonuses. Even at the time, the consensus was that bids were too high to allow value to be created.

It appears that this has proved to be the case, with the report concluding that of the 18 blocks, only eight have actually added value. Of these, only three are considered to have created value to any significant degree: LL-652 (operated by Chevron), Dacion (Lasmo) and Boqueron (BP).

A number of unexpected challenges have impacted the robustness of project economies, including far tougher technical problems than expected, cost escalations caused by an overvalued Bolivar and, more recently, political uncertainty under the Chavez-led administration, comments Wood Mackenzie.

The consultancy also points out that much development work is still to be done on these fields, and the possibility of failure remains.

The report states that internal rates of return are relatively low, within even the best projects only reaching 10% to 15% – a function not only of the disappointments experienced, but also of the tough fiscal terms in place.

The least successful project in terms of value destruction are said to include La Vela Costa Afuera (Phillips), Onado (CGC), Kaki and Maulpa (Inemaka).

The lack of success is partly attributed to the fact that most of the fields were more depleted than originally anticipated, because of this the technical challenges and costs required to boost production have been far greater than hoped.

Very few of the projects are reported to have achieved their production targets, or are expected to in due course. Wood Mackenzie estimates that only four projects have met initial objectives or may due so in the future: Acema (operated by Perez Companc/Corepli), Cabimas (Preussag), Dacion (Lasmo) and Mene Grande (Repsol YPF).

The Venezuelan Ministry of Energy & Mines and PdVSA are currently promoting a new licensing process, this time focussed on gas. A total of nine exploration blocks are on offer, plus two more on the Yucal-Placer gas discovery.

These blocks may present some interesting opportunities, however companies' enthusiasm might be tempered by their lack of success in previous initiatives. Will it be a case of once bitten, twice shy?

For more information, contact Wood Mackenzie on Tel: +44 (0)131 243 4400; Fax: +44 (0)131 243 4435;
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Repsol YPF acquires Trinidadian stake

Repsol YPF is acquiring 10% of BP's producing assets in Trinidad and Tobago. The agreement is the result of the decision to construct trains 2 and 3 at the Atlantic LNG plant. Repsol YPF also has a purchase option in three years' time of an additional 20%. One third of the assets acquired will be purchased by Gas Natural SDG.

BP holds a 34% stake in the Atlantic LNG train, with Repsol YPF holding a 20% stake. Once trains 2 and 3 are built and commissioned, production from all three is forecast to surpass 13bn cm/y of LNG.

BP owns the largest reserves of oil and gas in Trinidad and Tobago, having discovered 340bn cm of gas (21 times the annual gas consumption of Spain) in the past five years. It has announced two new discoveries in 2000 – Manakin and Red Mango – with joint proved gas reserves of 4tn cf (113bn cm). Estimated gas reserves for BP, including proved, probable and possible, amount to over 600bn cm. BP also has over 300mn barrels of proved, probable and possible oil reserves.

NEWS Upstream

UKCS production set to increase

Oil and gas production from the UK Continental Shelf (UKCS) is set to increase for the next three years, according to a recent survey from the UK Industry Leadership Team (ILT)*. Gas production levels could potentially go on increasing until 2005, while oil will do so until 2003, states the report. Combined production of oil and gas would therefore rise to a peak in 2004.

With new exploration potentially reducing the rate of long-term decline of the UK sector, the UKCS is on course for the Pilot vision of producing 3mn boe/d in 2010. 'These new production forecasts also mean that the UK's self-sufficiency in oil and gas production can be extended, bringing with it enhanced security of supply,' says ILT.

ILT also reports that operators intend to increase investment in the UKCS in 2001 by more than 33% over 2000 investment levels. 'New investment could amount to over £4bn, even before exploration expenditure is included.' Nearly half of next year's potential investment is understood to have already been approved. Confirmed investment plans include £158mn on development of Blake (BG operator); £71mn on Lomond/South Everest (BP); £50mn on Gannet/Kingfisher/Curlew (Shell); £35mn on Vixen (Conoco); £25mn on Keith (BHP); £19mn on Jade (Phillips); $4bn over four years on Skene (ExxonMobil/BP/Shell); and $700mn on Leadon (Kerr-McGee).

** The UK ILT was formed in 1998 to represent the oil and gas industry supply chain and unions during the deliberations of the government-backed Oil and Gas Industry Task Force (OGITF), now superseded by Pilot.*

Shell/Marathon asset swap

Shell and Marathon Sakhalin have signed an exchange agreement in relation to the transfer of Marathon's 37.5% interest in Sakhalin Energy Investment Company to Shell. Shell currently holds 25% of Sakhalin Energy.

In exchange, Marathon will receive a 28% interest in the BP-operated Foinaven field, all of Shell UK's interests in discoveries and prospects adjacent to the Foinaven field and a 3.5% overriding royalty from the production in an eight-block area in the Gulf of Mexico, including the Ursa field and the recently discovered Princess field. Marathon is also to be reimbursed for expenditure on the Sakhalin project in the year 2000.

19th UK round

The UK Government has opened the long-awaited 19th offshore licensing round. Attention focuses in and around the environmentally sensitive deep-water White Zone to the west of the Shetland Islands with 45 blocks on offer in quadrants 166, 176, 204, 212, 213 and 214.

The new licenses will have an initial term of six years, with an option to extend for a further 12 years. This second term may then be extended for a further 18 years. The government recently launched a three-month public consultation to assess the potential environmental impact of oil and gas operations in the White Zone – awards will be dependent on the outcome of this study.

Kyle development

The Kyle project partners recently announced that the North Sea field is to be developed through Shell's Curlew field FPSO facilities, which are owned and operated by Maersk Contractors. First production from Kyle is expected in March 2001.

Kyle partner Premier Oil reports that the Kyle 29/2c-13 appraisal well was recently completed and tested in the northeast sector of the field. The well produced 10,600 b/d of oil under facilities constrained conditions. Technical analysis of the test data indicates that the well has the potential to deliver in excess of 20,000 b/d.

North Sea asset sale

Norsk Hydro is understood to be selling its 10% interest in the Snøhvit LNG project in the Barents Sea, stating that 'LNG is not a natural part of Hydro's portfolio.' The asset includes the Askeladden and Albatross fields. First production is due in 2006, with field reserves put at 320bn cm of gas. Statoil recently sold 12% of its 35% interest in the Snøhvit project to Gaz de France.

Norsk Hydro is also planning to sell its 25% stakes in three exploration licenses on the Danish Continental Shelf – 4/98, 5/98 and 6/98. Phillips Petroleum holds a 30% interest in each of the licenses. Other partners are Veba (25%) and Dong (20%).

In Brief

***Statoil is understood to be planning to** submit to the Norwegian authorities a formal development and operation plan for the Mikkel gas field in 1Q2001.*

***Gaz de France is understood to have** acquired from Statoil a 20% stake in the North Sea Njørd field and a 12% interest in Snøhvit in the Barents Sea for an undisclosed sum.*

***Statoil and partner Maersk are** reported to be considering development options worth $50mn for the Siri East field in the Danish North Sea.*

***Petroz is reported to be selling its** exploration interests in Italy's Po Valley to joint venture partner Northsun Energy for an undisclosed sum.*

***Statoil is reported to be considering** two options to develop its North Sea Kristin gas and condensate field. A plan for development and operation is to be submitted to the Norwegian authorities in May 2001, with first production slated for 4Q2005.*

North America

***US independent Marine Energy is** understood to have bought onstream its Black Widow field in the Gulf of Mexico. The field is producing 10,000 b/d of oil and 4mn cf/d of gas through a single subsea well tied back to Agip's Morpeth mini-TLP.*

Middle East

***Kvaerner has secured a detailed engineering** contract for an offshore production platform destined for Elf Petroleum's Balal field in Iran. The platform will process 40,000 b/d of oil, with a maximum 33,000 b/d of produced water and 14mn cf/d of associated gas.*

***Two major gas/oil separation plant** projects (GOSP) are to be tendered before the end of 2000 in the Saudi upstream sector by Saudi Aramco, reports* Stella Zenkovich. *The projects are known as Haradh – which is expected to have a processing capacity of 600,000 b/d – and Qatif – which is expected to cost some $800mn to develop.*

***In the UAE, Zakum Development** Company (Zadco) and Abu Dhabi Marine Operating Company (Adma-Opco) plan to jointly commence a gas re-injection programme in early 2001*

In Brief

in some parts of the 20-year old offshore Zakum oil concession. The field currently produces 420,000 b/d of oil, reports Stella Zenkovich.

***Petro Iran, a subsidiary of National** Iranian Oil Company (NIOC), has secured the long-awaited $850mn contract for expanding oil output and for developing gas reserves at the Salman offshore field which Iran shares with Abu Dhabi, writes* Stella Zenkovich.

Russia & Central Asia

***According to UFG, Shell has decided to** waive its right to acquire a 44% stake in the Vankgorskoye field, Eastern Siberia.*

***Russia, China and Korea are reported** to have agreed to a joint feasibility study of the 9.2bn boe Kovykta field in Russia. The project marks the first step towards establishing a market for Russian gas in China and Korea. The Kovykta field is owned by Rusia Petroleum and operated by BP.*

***Korea Gas Corporation (Kogas) is** understood to have signed a deal with Russian Petroleum Company and China National Petroleum Corporation (CNPC) in order to jointly develop the Kovyktinskoye gas condensate field in eastern Siberia. First gas is expected as early as 2008.*

***TotalFinaElf, which together with** Norsk Hydro operates the first onshore PSA in Russia, is understood to be planning to invest $230mn on its Russian operations over the next two years.*

***The Azerbaijan International Operating** Consortium (AIOC) is reported to have allocated $50mn of funds for development work on the first phase of the Azeri–Chirag–Guneshli project which is due onstream in 2004.*

Asia-Pacific

***Yaha, claimed to be largest condensate** field in China, has been brought into operation. It is situated in the Tarim oil field, located in the Xinjiang Uygur Autonomous region, in western China. The field is expected to produce some 500,000 t/y of condensate and 1.2bn cm/y of gas.*

***Conoco is understood to have** acquired a 40% stake in blocks G and J*

Sterling depreciation keeps oil price high

A 12.6% fall in the value of the pound against the dollar over the last year accounted for one third of the rise in sterling oil prices, according to the latest *Oil and Gas Index* from the Royal Bank of Scotland. The current sterling price of oil – around £21.80 – is almost 64% higher than in October 1999, whereas the dollar price at $31.50 is 43% higher.

The *Oil and Gas Index* for August also shows that UK North Sea oil production fell sharply for the second consecutive month. Output on the month was down by 2.6%, or 61,000 b/d. Year-on-year production showed a 13.6% fall (360,000 b/d). On a more positive note, the long-term upward trend in gas output continued with a 9% rise in production on the year. Average daily output in the 12 months to August was 13.3% higher than in the 12 months to August 1999.

Year Month	Oil production (av. b/d)	Gas production (av. mn cf/d)	Av. oil price ($/b)
Aug	2,645,493	6,604	19.93
Sep	2,588,488	7,379	22.83
Oct	2,666,146	9,380	22.03
Nov	2,698,681	11,641	24.64
Dec	2,634,050	13,054	25.64
Jan 2000	2,645,841	12,900	25.63
Feb	2,567,535	12,645	27.97
Mar	2,606,250	12,306	27.27
Apr	2,480,945	12,024	23.15
May	2,209,571	8,904	24.15
Jun	2,407,709	8,455	30.50
Jul	2,345,970	7,256	28.89
Aug	2,284,550	7,197	31.6

Source: The Royal Bank of Scotland Oil and Gas Index

North Sea oil and gas production

Mozambican hat-trick for Sasol

Sasol and the Government of Mozambique have signed three major agreements that, in broad terms, cover the joint development of country's Pande and Temane gas fields and the piping of gas to customers in Mozambique and South Africa.

A new production sharing agreement grants Sasol the rights, with an interest of 100%, to explore for hydrocarbons in the remaining acreage around the Pande and Temane gas reserves. Subsidiaries of Empresa Nacional de Hidrocarbonetos de Mocambique (ENH), the State Oil Company of Mozambique (holding a 30% stake) and Sasol (70% equity share) will be partners in the development of the two fields. The gas reserves in the fields will be dedicated to Sasal Gas through a gas sales agreement, for on-selling to customers in Mozambique and South Africa.

Sasol and the Mozambican Government have also settled on the terms of a pipeline agreement. Sasol and a subsidiary of ENH will jointly own and build a pipeline from Temane to Ressano Garcia on the border between Mozambique and South Africa, to take 120mn GJ/y of gas to South African customers. Provision has also been made for the supply of gas to the Maputo Iron and Steel Project (MISP), as well as for free transportation of some of the gas taken by the Mozambican Government. A similar company is to be established in South Africa to transport gas from the border to Secunda. It is expected that the South African Government will also be a partner in the pipeline project.

Subject to a number of remaining conditions being met, the natural gas project is expected to begin in June 2001 with the start of construction work on the pipeline and field facilities.

Environmental report on UKCS ops

The UK Offshore Operators Association (UKOOA) has published a report that evaluates the overall environmental performance of 30 companies operating on the UK Continental Shelf (UKCS). The study, entitled *Balancing Needs – UKOOA 2000 Environmental Report*, is based on 1999 data on all discharges, emissions and wastes associated with oil and gas operations offshore.

It shows that:

- **The number of accidental oil spills stemming from the industry's offshore operations, and the quantities involved, have continued to decline – from 376 incidents involving 137 tonnes in 1998 to 372 and 119 tonnes in 1999.**
- **There has been a marked reduction in the use of unclassified chemicals in favour of those included in the UK Government's Offshore Chemical Notification Scheme (OCNS) – from 14,702 tonnes of unclassified chemicals in 1998 to 5,449 tonnes in 1999. The scheme classifies chemicals by their environmental impacts on a scale ranging from 'A' (hazardous) to 'E' (benign) and controls the amounts that can be discharged. Some 92% of all chemicals discharged by the industry in 1999 were classified as benign.**
- **Atmospheric emissions in all five main streams – carbon dioxide, carbon monoxide, NO_x, sulfur dioxide, methane and volatile hydrocarbons – fell in 1999. The amount of natural gas flared last year dropped by just over 100,000 tonnes.**
- **The level of oil in produced water has been further reduced to 21.67 parts per million (ppm). Although the total amount of water produced in offshore operations is rising as the number of offshore installations increases and oil production in the older field decreases, the actual amount of oil discharged to the sea with this water is falling.**

Chinese/US platform first in Bohai Bay

Noble's Energy Development Corporation (China) has been given the green light by the Chinese authorities to develop the Cheng Dao Xi block A field, offshore the northern coast of Shandong Province in the southern part of Bohai Bay. First production is slated for 2Q2002. The project forms part of the overall development of the Shengli field, claimed to be the second largest oil field in China.

US company Paragon Engineering Services is performing engineering, design/drafting and procurement services for Noble EDC. It has already completed preliminary design and is currently performing detailed design of a central drilling/production platform that will be located in 25 ft of water. Bohai Bay is a relatively harsh environment, with significant ice loads, heavy storms and temperatures down to 0°F. The region also experiences moderate seismic activity and some areas are susceptible to soil liquefaction.

In a bid to cope with these conditions, the platform is being designed to cope with 1.5 ft of ice, largely caused by the freshwater flows from the Yellow River, one of China's major rivers, that flows into Bohai Bay near the platform site. It is also being designed for API Zone 3 earthquake conditions.

The large, six-pile fixed platform calls for a float-over deck installation to facilitate hook-up of a 3,100-tonne integrated deck. All topside equipment will be pre-installed and pre-commissioned. The facility also features two well bays completely outboard the main platform, allowing for simultaneous drilling by two different jack-up rigs. Each bay has 12 slots. 'The ability to operate two rigs simultaneously at the platform drastically reduces drilling and completion time,' comments Pete Peterson, Noble's Project Manager. 'This strategy allows for an earlier start-up of the facilities, while reducing the cost of service through lower mobilisation cost and rig up time.'

The platform will be designed to produce 8,500 b/d of oil. However, with minor modifications and equipment additions, a higher capacity of 12,000 b/d could be achieved. Production will be exported via subsea pipelines to the existing Shengli Hai San onshore terminal.

According to Paragon, the Cheng Dao Xi project represent the first joint Chinese/US design of a platform in the Shengli area.

In Brief

offshore Sabah, Malaysia, from Shell for an undisclosed sum.

***PetroChina is reported to have found** oil in the southern part of the Junggar Basin in the northwest region of Xinjiang. Possible reserves are put at 60mn tonnes of oil.*

***Unocal has brought its Mahoni field in** Indonesia's East Kalimantan province onstream, a month ahead of schedule. The field is currently producing 4,000 b/d of oil. Reserves are put at 3.6mn barrels.*

***Woodside has awarded the subsea** installation contract for the Echo/Yodel project to Coflexip Stena Offshore Asia Pacific.*

Latin America

***Guatemala is reported to have post**poned its next licensing round from September 2000 until March 2001.*

***Perupetro is reported to have post**poned its next oil E&P licensing round until 2001. A total of 13 offshore blocks are expected to be put out to tender.*

***Petrobras is reported to have discov**ered what is claimed to be one of Brazil's largest natural gas finds in the Camamu Basin, offshore the northeast coast. Reserves are thought to be in the region of 20bn cm of gas.*

***Wintershall has acquired a 35% stake** in the Tauro-Sirius and Octans-Pegaso concessions offshore Tierra del Fuego from Total Austral for an undisclosed sum. The concessions incorporate proven, but not yet developed, gas reserves in the region of 21bn cm of gas, as well as a number of attractive exploration prospects.*

***Enterprise Oil (55%, operator) has** awarded a $55mn contract to Diamond Offshore for development drilling at its Bijupira-Salema deepwater field offshore Brazil, subject to project sanction and ANP approval. The field is to be developed via an FPSO converted from a shuttle tanker. Drilled is slated to begin in mid-2001. Field partners are Odebrecht (25%) and Petrobras (20%).*

***A total of 53 blocks – 31 deepwater, 12** shallow-water and 10 onshore – are to be auctioned under Brazil's third licensing round in June next year.*

In Brief

UK

BP has posted a $5.68bn 3Q2000 operating profit, *compared with $3.14bn for 3Q1999. Operating profit from E&P was $4.16bn, accounting for some 73% of the company's total operating profit. Capex for 2000 was $10.5bn, up 14% since 1999. Capex for 2001 is budgeted at $13mn, $8bn of which is earmarked for upstream projects.*

Shell has posted 3Q2000 adjusted CCS *earnings (earnings on a current costs of supplies basis excluding special items) of $3,254mn, up 68% from the same period last year. Reported net income for the quarter was $3,060mn, 29% above 3Q1999.*

Europe

TotalFinaElf has increased its control of *the capital of PetroFina from 98.8% to 99.6% following an offer for its shares on the PetroFina exchange.*

The Norwegian Government has voted *to privatise around one third of Statoil, the state owned oil company. A sale could be made as early as mid-2001 if Parliament agree to the proposal. Analysts believe that the sale will be worth $6bn.*

North America

Shareholders of Canadian Occidental *Petroleum are reported to have approved Nexen Inc as the new corporate name for the company.*

Centrica is acquiring Avalanche Energy *of Canada for C$253.5mn.*

Chevron and Schlumberger are to *undertake a multi-year research project aimed at developing improved reservoir-optimisation software.*

Unocal has posted a five-fold rise in *3Q2000 profits, with adjusted earnings from operations reaching $228mn compared with $44mn 3Q1999.*

Coflexip Stena Offshore (CSO) is *reported to be acquiring Aker Maritime's US-based Deepwater Co. for $625mn in order to improve its ability to tender for large EPIC contracts.*

Baker Hughes has posted a 3Q2000 net *income of $66.7mn, compared with $13.2mn in 3Q1999. However, it is*

Fuel duty freeze in 2001 UK Budget

The main measures to be implemented in the 2001 UK Budget, announced In November by the Chancellor of the Exchequer Gordon Brown, are:

- A cash freeze on all road-fuel and other oil duties – a real terms cut in the price of petrol and diesel of 1.5 p/l, costing £560mn in 2001–02.
- Conditional on the oil companies guaranteeing nationwide availability, a cut in the duty on ultra-low sulfur petrol (ULSP) by a further 2 p/l, widening its differential with standard unleaded petrol to 3 p/l.
- Also conditional on the cuts in ULSP, and to maintain the existing balance between the most commonly available petrol and diesel, a 3 p/l cut in duty on ultra-low sulfur diesel.
- An extension of the 'small' car threshold for vehicle excise duty (VED) from 1200cc to 1500cc, backdated to November 2000, costing £250mn/y and helping an additional 5.4mn car owners.
- A 50% cut in, and reform of, VED for lorries, costing £300mn/y. As a first step in this reform, up to £265mn will be available to rebate VEDs for this financial year.
- Abolishing VED on tractors and other agricultural vehicles.
- Support for the haulage industry with a new driver training scheme and a ring-fenced fund worth £100mn to include incentives or allowance to help modernise the vehicle fleet, including the introduction of 'cleaner lorries' and new technology.

All the measures listed, except road fuel and oil duty freezes and the rebate of lorry VED this financial year, are subject to consultation.

It was also announced that, in response to arguments that lead replacement petrol (LRP) is no worse for the environment than unleaded petrol, the government proposes – subject to a full assessment of the environmental implications – to remove the duty premium on LRP, a 2 pence cut in duty.

In a bid to help level the playing field for UK hauliers, who pay higher vehicle taxes and more for fuel than many of their European counterparts, it is proposed to introduce some form of user charging for foreign hauliers, such as a 'vignette.'

Amerada Hess and Lasmo agree merger deal

US independent Amerada Hess is reported to have agreed a $3.5bn takeover bid for UK independent Lasmo. The merger, which is expected to produce annual pre-tax synergies of $130mn, will give Amerada new operated reserves at $5.49/proved barrel and boost the proportion of its proved and probable reserves outside the US and North Sea to 41% from 16%. Lasmo holds a 100% of the Dacion field in Venezuela, accounting for 29%, or 240mn boe, of the company's total reserves. Earlier this year, Amerada acquired the Caspian reserves of Ramco as part of a drive to expand its geographical spread of resources.

New Russian pipeline proposal

Investors in the Northern Territories project – Lukoil, Arkhangelskgeoldoycha and Conoco – recently held a presentation covering their proposal to create a transportation system for Russia's Northern Territories. The proposed system should provide for the efficient transportation of oil – up to 7.5mn t/y – from the Northern Territories fields. The system should also allow the pumping of additional volumes of crude oil extracted at other fields in the Timan Pechora province.

The projected transportation system envisages construction of onshore and offshore pipelines. The insulated onshore pipeline will be mounted on plumb piles which will be installed in the permafrost during the winter. The offshore part of the pipeline will be buried in the seabed and installed in the summer. Antirust and cathodic protection systems will also be installed to prevent corrosion. In addition to the pipeline, the construction of a fixed, ice-resistant oil terminal has been proposed. Oil will be shipped in ice-breaking tankers, possibly in double-hulled tankers.

The Northern Territories project has been added to the list of projects to be developed under PSA contracts.

Shell signs strategic Chinese alliance

Shell Overseas Investments has signed a strategic alliance with the China National Offshore Oil Corporation (CNOOC) to jointly develop a range of opportunities in oil and gas exploration and production and gas marketing. A number of oil and gas fields in three blocks in Bohai Bay will be developed and the Bonan block will be explored further. The fields are located roughly 100 km north of Longkou, in 100 metres of water. Estimated in-place reserves are put at 1tn of gas and 600–700mn barrels of oil. Current plans are to supply 0.4–0.8bn cm/y of gas from this development to Shandong customers, through a joint marketing initiative. As soon as foreign participation is allowed, reserves in the Xihu Trough will also be explored and developed. The Trough is located 350 km southeast of Shanghai.

The proposed gas marketing venture in East China includes the areas of Shandong, Anhui, Henan, Jiangsu, Shanghai, Fujian and Zhejian. Gas will be sold to major power, municipal and industrial customers. In addition, a feasibility study for gas transmission will be conducted, linking major coastal cities in East China. The two companies will form joint ventures where they see fit. Studies are expected to start in 2001.

Finally, CNOOC will supply auto LPG to, and install equipment in Shell's existing retail stations in Beijing. The two companies will jointly operate the auto LPG facilities.

Desmarest – Petroleum Executive of the Year

The Chairman of TotalFinaElf, Thierry Desmarest, has won the Petroleum Executive of the Year award from Energy Intelligence Group. Speaking at the annual award ceremony Desmarest noted that his selection for the award amounted to recognition that TotalFinaElf, which was once regarded as a parochial French player, is now a global concern. The acquisitions of PetroFina and Elf have made Total the world's fourth biggest publicly traded company in terms of market capitalisation (which is now more than $100bn) and the fifth biggest in terms of oil and gas production.

Desmarest also noted that Total is on track to achieve its targeted rise of 40% in oil and gas output by 2005, to 2.8mn boe/d. While reported equity output registered only 2% growth in 1H2000, to 2.142mn boe/d, physical output rose 5% after the impact of higher prices on buy-back and production sharing contracts are factored into volumes, he said.

Concerns that projects could be at risk following Jose Maria Boleho, the Angolan Oil Minister's comments in October of this year – that the Angolan Government wanted to conserve the country's oil reserves and would approve oil fields on a one by one basis – were played down by Desmarest. He stated that there was no threat to Total's growth plans. He said that plans for the Girassol field have already been approved and that production will begin by the end of

2001. He was also optimistic about Dalia, which together with Girassol, is projected to produce 400,000 b/d.

Desmarest also reiterated calls for an easing of restrictions on investments in Iraq, where Total has set its sights on the Majoon and Bin Umar fields. He believes that Iraqi production could be doubled in three to four years from the current 3mn b/d.

He played down the prospect of further acquisitions for the present, arguing that his staff now need stability, and that regulators on both sides of the Atlantic pose increasingly difficult challenges. He did admit, however, that the company is considering buying a stake in the soon to be privatised Gaz de France.

In Brief

expected to record a post-tax loss of $75mn in the 4Q2000 as it writes off its remaining exploration assets.

***Kerr-McGee has posted a 3Q2000 net** income, excluding special items, of $266mn.*

Middle East

***RasGas of Qatar is understood to have** agreed to supply 1.8mn t/y of LNG to Taiwan's Tung Ting Gas Corporation over a 25-year period beginning late 2003.*

Russia & Central Asia

***Lukoil of Russia is to acquire US inde**pendent marketer of gasoline and petroleum products Getty Petroleum Marketing for $71mn as part of a drive to expand into the US market. It is understood to be the first time that a Russian company has acquired a publicly held US company.*

***The Russian Energy Minister,** Alexander Gavrin, has forecast a modest 10% increase in oil production over the next decade, reports the United Financial Group. However, UFG states that: 'given we expect PSAs alone to deliver 10–15% production growth over their first decade, this assumes that Russian production (excluding PSAs) will be essentially flat over the next 10 years.'*

***The European Union began exploratory** talks with Russia in October over a strategic energy deal aimed at reducing its reliance on Opec for oil, writes* Stella Zenkovich. *The EU is offering public and private investment in return for a 20-year oil and gas supply agreement.*

Asia-Pacific

***The New Zealand regulatory** commission has given Shell and Apache the go-ahead to proceed with their $1.72bn bid for Fletcher Challenge Energy (FCL). FCL is selling its energy division to Shell and Apache, and sharing out some of its assets with shareholders. The commission concluded that the new bid would not strengthen Shell's dominance in New Zealand's gas market or in LPG production now, or in the near future. Shell will keep most of FCL's interests in New Zealand's Maui and Pohokura fiedls, as well as the company's Brunei assets.*

In Brief

UK

***Stephen Byers, UK Secretary of State** for Trade and Industry, has lifted the stricter gas power station consents policy and the approval of six schemes which will pave the way for a potential £2bn investment in new projects.*

***The UK Minister for Energy, Helen** Liddell, has approved Conoco's application to build a 475MW gas-fired combined heat and power station in South Killingholme, North Lincolnshire.*

***Vopak Terminals UK has been** appointed marketing agent for Ross Chemical and Storage Company, a wholly owned subsidiary of KP(GB).*

***Conoco and Darch Oils, a new distributor** for Jet (Conoco's fuel brand in the UK) have opened a new road tanker loading facility at Portland Port on the south coast of England.*

***Baring English Growth Fund has** invested £1mn, and secured a 24.5% stake, to finance the overseas expansion of Catalist, the developer and owner of the UK petrol retail market's comprehensive information database. Catalist's database holds information on a range of forecourt activities, fuel volumes and brand issues for 16,000 service stations in the UK and Ireland. Plans are to extend this initially throughout Europe, later rolling out to the Far East and US.*

Europe

***Conoco has opened the first of its** 'new-generation' service stations near Budapest, Hungary. The new Jet-branded station, features a 'Jiffy' convenience store.*

***Shell and US company Cinergy are** understood to have secured a 30-year franchise to develop and operate the natural gas system in the Athens region of Greece.*

***Gas Natural of Spain is planning to** sell a 65% stake in its gas distribution business Enagas on the stock market in an initial public offering in 2001.*

***TFE of France is to join the $500,000,** 50:50 Sonatrach and Cepsa joint venture to study the feasibility and construction of a new, third gas pipeline linking Algeria to Europe via Spain, writes* Stella Zenkovich. *The new pipeline will provide southern France with a new gas supply.*

EC call to diversify Europe's energy sources

The European Commissioner for Energy has called for the EU to diversify its energy sources in a bid to protect itself against future oil price rises, reports *Keith Nuthall.* Speaking at the Coaltrans conference in Madrid, Loyola de Palacio even embraced coal, long regarded in Brussels as a dirty fuel with no future.

She said: 'We should keep the coal option open because of the abundance and diversity of resources, because it is easily available and cost-competitive. In addition, coal has a stabilising effect on energy markets. Coal played a leading role in solving previous oil crises and remains available as a substitution fuel.'

The Commission predictably called for additional resources to be ploughed into renewable energy, but also gave support to nuclear energy, the other main energy pariah. Taking account of the EU's Kyoto Protocol greenhouse gas commitments, she said: 'Nuclear energy has made it possible to avoid 800mn tonnes of emissions per annum. Giving up the nuclear option would make it impossible to achieve the objectives of combating climate change.'

BP to sell hat-trick of US refineries

BP has announced that it intends to sell three of its US refineries – Salt Lake City in Utah, Mandan in North Dakota and Yorktown in Virginia – as part of its global refining rationalisation strategy. The refineries have a combined capacity of 177,000 b/d.

The refineries will continue to function as normal while the sales are going through. BP states that it has already received a number of unsolicited inquiries from potential purchasers and the sales should be complete by mid-2001.

These sales, along with the intended sale of BP's stake in the Singapore Refining Company and the recent sale of the Alliance refinery in Louisiana – sold to Tosco in September 2000 – mean that BP will reach its target of reducing its worldwide refining capacity by around 500,000 b/d.

Once the divestment is complete, BP's total worldwide refining capacity will be 2.8mn b/d, of which 1.5mn barrels will be in the US.

Shell signs Egyptian GTL deal

Shell and the Egyptian General Petroleum Corporation (EGPC) have signed a development protocol for a 75,000 b/d gas-to-liquids conversion plant using Shell's Middle Distillate Synthesis (SMDS) and at least one LNG train to convert Eygpt's natural gas to environmentally friendly synthetic fuels.

The plant – which at present is expected to be built at West Demiatta on the Mediterranean coast – could be put into commercial operation by mid-2004 for the LNG and late 2005 for SMDS. LNG exports are expected to be targeted at southern Mediterranean countries.

Tanzania tackles fuel dumping problem

Anti-counterfeit and product authentication technology specialist Biocide has secured an exclusive contract with the Tanzanian oil industry to combat fuel dumping (where fuel duty is not paid) and fuel tampering. The company recently signed similar contracts for the oil industries in Kenya and Uganda.

It is estimated that fuel dumping and tampering can cost countries' economies some $100mn/y. In Tanzania, the Tanzania Revenue Authority now requires all imported fuels to be marked specifically with a marker provided by Biocide. The company's molecular lock and key technology allows the fuel to be marked with a safe and highly specific chemical marker that can be detected solely by Biocide's detection system. The field detection test can authenticate the fuel in as little as five minutes, claims the company, and determines whether there has been any malpractice.

The markers are added to the fuel at the distribution depots and tested by the Tanzanian authorities at various points in the distribution chain.

NEWS Downstream

Minale designs new look for Maser

Minale Tattersfield reports that it recently updated the brand identity of Italian forecourt equipment supplier Maser and redesigned the company's forecourt automated pay systems – the MAC and MAF. The new brand is in the style of an oval-shaped car badge and retains the corporate green colour. It uses a more modern typeface and incorporates a stylised graphic representation of the petrol pump.

The new design for the automated payment system complements the new brand identity. It is characterised by a curved fronted shell with an angled interface, including a colour LCD screen, speakers, card and bank note reader. A range of models has been developed, including a wall-mounted version. A new low level pump and a high, suspended hose type pump have also been developed.

Minale has also recently designed a new generation of petrol pumps for Marconi, incorporating new US customer interface technology with other European components to produce a system meeting international design requirements. Marconi, now part of the General Electric Company, is one of the largest pump suppliers in the world, having recently acquired petrol pump manufacturers Gilbarco and Logitron.

Prize-winning venture

Repsol YPF and Abengoa have been awarded the European Commission prize for the Best European Industrial Venture in Renewable Energy. The prize-winning venture involves the ultimate transformation of 226mn l/y of bio-ethanol from fermented grain at oil refineries into components for environmentally friendly high octane gasoline.

Approximately half of the 226mn litres of bio-ethanol is currently being supplied by Abengoa's Cartagena plant to Repsol YPF's refineries – at Puertollano and La Coruna. The remaining bio-ethanol will be available in 2001, when Abengoa's second plant comes onstream in La Coruna and the Repsol YPF refineries at Bilbao and Tarragona are incorporated.

Pipeline technology award nominations

The UK Pipeline Industries Guild is inviting all companies in the pipelines industry to enter for one of its pipeline technology awards. The awards are made annually in recognition of significant contributions either to subsea or landbased pipeline engineering.

Further details and application forms are available from Richard Glenister at the Guild. Tel: +44 (0)20 7938 7235; Fax: +44 (0)20 7235 0074; e: **glenister@pipeguild.co.uk** The closing date is 31 December 2000.

In Brief

North America

US-based GlobalView Software is to *distribute International Petroleum Exchange's (IPE) energy futures contract market data.*

Middle East

Samsung Engineering of South Korea *has secured a $64.8mn contract from Qatar General Petroleum Corporation to complete Phase 2 of the Khuff gas pipeline replacement project in Qatar.*

Shell India is reported to have agreed, *in principle, to buy 2mn t/y of LNG from Oman LNG.*

The Ukrainian Government is supporting *a proposed 141-km gas pipeline linking Russia to Iran via Armenia by offering to import 10bn cm/y of gas through the line. The pipeline is expected to cost $124mn, writes* Stella Zenkovich.

Russia and Central Asia

Lukoil is planning to complete the *upgrade of the 72,000 b/d Ukhta refinery by the end of 2001, reports the United Financial Group.*

Fortum reports that its network of service *stations in Estonia, Latvia, Lithuania and Poland are to be converted to unmanned Neste A24 branded stations by the end of the year. The sites will be open 24 hours a day. Fortum plans to increase its number of unmanned stations to 200 within the next couple of years. It currently has 60 such sites in operation.*

A Russian Government resolution has *just been published which allocates at least 15% of its pipeline capacity to independent producers, according to United Financial Group. A 15% allocation to independent producers is a major step toward the opening up of the Russian gas market.*

Lukoil is understood to be planning to *commission 118 new Russian service stations and refurbish 49 old ones in 2001. The company currently operates some 1,000 outlets, all but 150 based in Russia. Longer-term plans are to build 620 new sites and refurbish a further 280 by 2005.*

The first stage of Russia's Nizhnekamsky *refinery is to be commissioned in mid-*

In Brief

2001, reports Stella Zenkovich. *Tatneft, the main shareholder, with a 63% stake, is looking for a foreign partner to carry out a $150mn, five-year development programme for the facility. Plans are for the plant to ultimately be able to refine high sulfur crudes, making it the only such facility in Russia.*

***Frontera Resources of the UK is to** commence exports of oil from the Taribana and Mirzaani fields of the Kalkheti region of Georgia with a test shipment of 1,500 tonnes going to Europe via the port of Batumi, reports* Stella Zenkovich.

Asia-Pacific

***BP reportedly has plans to build** 1,200–1,500 petrol stations in China by 2007. The southern provinces of Guangdong and Fujian and the eastern province of Zhejiang will be marked for BP's retail network expansion. Currently, BP has less than 40 petrol stations operating in mainland China.*

***West Bengal Power Development** Corporation (WBPDC) has set up what is claimed to be the state's first LNG-based power project at Sagardighi.*

Latin America

***Repsol YPF has acquired a 45% stake** in Lipigas, which holds a 41% share of the Chilean LPG market, for $171mn.*

***TotalFinaElf has signed an agreement** with Chilean company Gener to form a strategic alliance covering the development of electricity generation throughout Latin America. TotalFinaElf will hold an 80% interest in the venture.*

EC report on VOC emissions is delayed

A delay of at least two months is anticipated before the European Commission (EC) will receive its commissioned study* into the costs and benefits of adopting a compulsory policy to end volatile organic compound (VOC) emissions at ports and terminals during loading and discharging of hydrocarbon products. Originally due to be published last October, January 2001 is now being suggested as the earliest date the report can be distributed for wider industry discussion, writes *Brian Warshaw*.

The delay is reportedly due to the consultant, AEA Technology, having experienced difficulty in obtaining reliable cost information. Although many marine vapour recovery systems (MVRS) have been installed in the US, most of these have used flares, which would be considered unacceptable in Europe as the primary means of disposal. During the last four years, however, three major installations have been built in Europe – two for crude oil loading and one for refined products. The capital cost involved in these projects has been varied and greatly dependent on the extent of structural reconstruction necessary.

BP's crude oil loading facility at Hound Point, near Edinburgh, Scotland, was commissioned in December 1998, and cost £60mn, some of which is accounted for by a new platform structure in the Firth of Forth to accommodate equipment, and to a 4-km long vapour pipeline. The vapour is converted to liquid crude oil at the Dalmeny terminal, where there is also a standby flare for use during periods of maintenance or breakdown of the MVRS. The system is based on the absorption of the VOC emissions in a stream of cold kerosene before being converted to liquid crude oil in a series of heat-exchangers. At Hound Point the loading and vapour recovery system is designed to handle a throughput of 310mn b/y and two tankers can be loaded concurrently from separate berths.

In Norway, the Norsk Hydro-operated Sture crude oil terminal's MVRS was brought into service in 1996. Loading between 350 and 400 tankers each year, it has an annual throughput of 280mn barrels of crude oil and uses a similar VOC recovery process to BP. A spokesperson for the company said that when built, the installation had been on budget at NKr140mn ($21.5mn).

Due to come into service on 1 January 2001, the MVRS at Sweden's Port of Gothenburg's Skarvik oil harbour cost under SKr60mn ($6.1mn). Three pressure swing carbon vacuum adsorption units have been installed and the port will load Class 1 petroleum products from four berths, enabling a simultaneous loading rate of 5,900 cm/h. From 1 January 2001, all tankers visiting Swedish oil ports and terminals to load petroleum will be required to be equipped for vapour recovery.

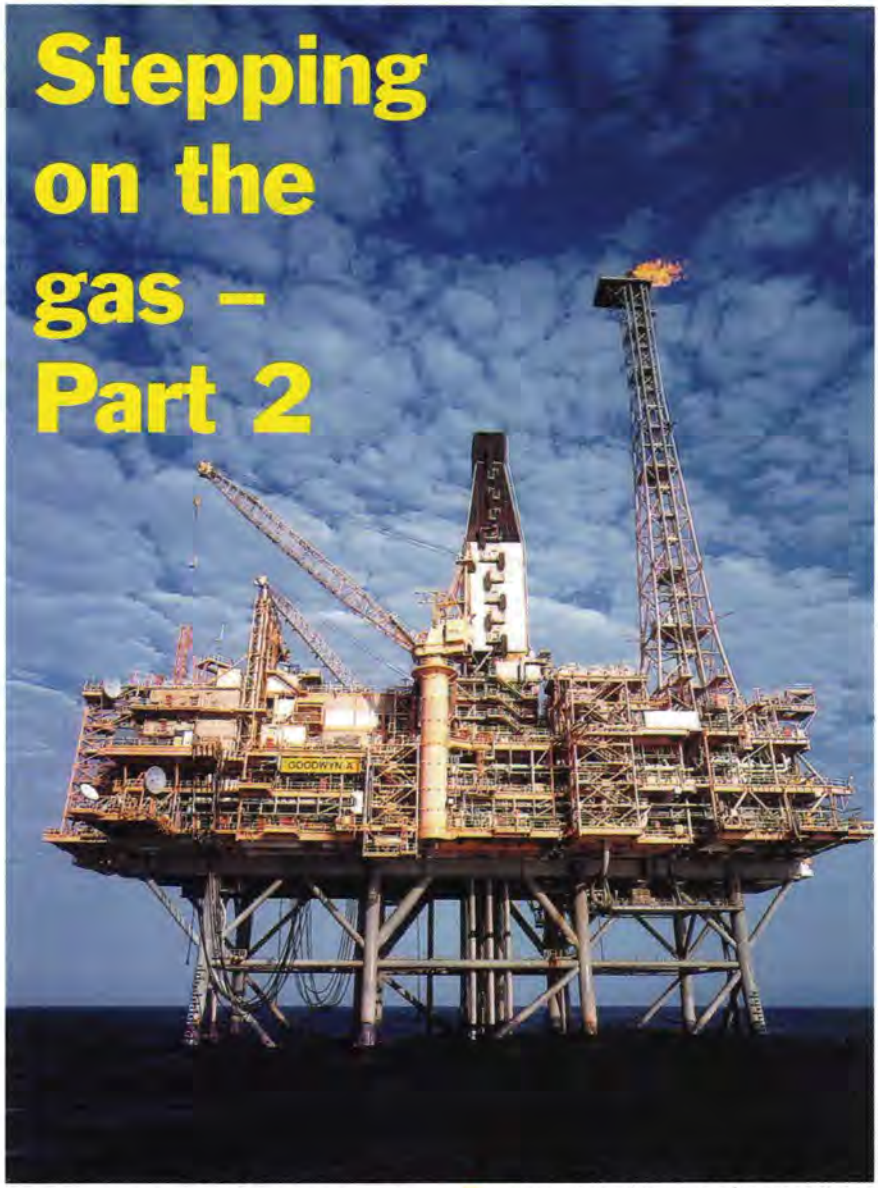
**The study was commissioned as part of the European Community's intention to promote new air quality objectives for ozone and national emission ceilings.*

UK Deliveries into Consumption (tonnes)

Products	†Sep 1999	*Sep 2000	†Jan–Sep 1999	*Jan–Sep 2000	% Change
Naphtha/LDF	261,454	180,274	2,400,171	1,623,372	–32
ATF – Kerosene	895,627	995,463	7,204,423	7,711,792	7
Petrol	1,789,044	1,685,759	15,993,897	15,643,620	–2
of which unleaded	1,597,197	1,542,945	13,704,219	14,378,393	5
of which Super unleaded	34,330	37,888	270,265	303,558	12
of which Premium unleaded	1,562,867	1,505,057	13,433,941	14,074,835	5
Lead Replacement Petrol (LRP)	0	142,814	0	1,265,227	–
Burning Oil	223,434	267,716	2,511,946	2,658,590	6
Automotive Diesel	1,258,835	1,300,460	11,228,864	11,522,145	3
GasOil/Marine Diesel Oil	537,159	566,875	5,029,241	5,149,242	2
Fuel Oil	127,474	135,068	1,520,672	1,159,186	–24
Lubricating Oil	70,310	72,334	593,133	610,947	3
Other Products	666,308	681,075	6,301,252	6,160,828	–2
Total above	5,829,645	5,885,024	52,783,599	52,239,722	–1
Refinery Consumption	456,466	434,156	4,617,769	3,939,754	–15
Total all products	6,286,111	6,319,180	57,401,368	56,179,476	–2

† Revised with adjustments * Figures dated from Feb 2000 onwards are the final figures as supplied by reporting companies, they are no longer provisional figures

Stepping on the gas – Part 2



Last month's *Petroleum Review* looked at recent E&P developments in the Asia-Pacific region where foreign interest is increasingly focusing on exploiting gas reserves. In Part 2 we review developments in Australia and New Zealand.

Goodwyn A platform
Photo courtesy of Woodside

In preparing the second part of our review of the recent trends and upcoming oil and gas developments in the Asia-Pacific region, we have drawn extensively on recent reports from the Edinburgh-based consultants Wood Mackenzie as well as information supplied by the Australian Petroleum Production Exploration Association (APPEA), among others. *Petroleum Review* would like to thank all concerned for their help and assistance.

Australia

Over two-thirds of Australia's primary energy consumption is met by coal and oil. Of the 102.8mn toe consumed in 1999, approximately 44.5% of demand was met by coal, 37% by oil, 17% by gas and 1.5% by hydroelectricity. The country is totally self-sufficient in coal, producing more than three times its annual requirements. Reserves are put at 90,400mn tonnes. However, Australian oil production covers just 68.5% of the country's requirements. In 1999, it produced 575,000 b/d of oil and consumed 840,000 b/d. Oil reserves are put at 2.9bn barrels, and with an oil R/P (reserves/production) ratio of 15 years, oil imports look set to continue to rise.

The country is totally self-sufficient in gas, with reserves of 1.26tn cm. With an R/P ratio of 41.3 years, it is a major exporter of gas – particularly to Japan. In 1999 Australia produced 30.6bn cm of gas and consumed 19.8bn cm. Gas reserves are put at 1.26tn cm, much of which lie in the Carnarvon Basin on the North West Shelf. These reserves underpin a planned two-fold increase of Australian LNG exports, primarily to Asian markets, which are forecast to rise to 15mn t/y by 2005.

According to Wood Mackenzie, some 1.42tn cm (50tn cf) of uncommercialised gas reserves are located off the north-west coast of Australia, the most probable to be developed located in the Gippsland and Otway Basins. The Papua New Guinea to Queensland Gas Project is considered the most significant project in terms of the amount of gas reserves to be developed, with the cost of the first stage of the upstream development put at $300mn by the operator, Chevron. (See the Papua New Guinea section of Part 1 of this review in the November issue for more details.)

Future oil field developments (see **Table 1**) include the Legendre (60mn barrels of reserves), Tenacious (5mn barrels) and Woollybutt (25mn barrels) fields in 2001, and Vincent (20mn barrels) in 2002. Probable future gas developments include Patricia Ballen (<100bn cf of gas reserves) in 2001, Minerva (360bn cf) in 2002 – which is to supply gas to a fertiliser plant at Lara, Geelong, in Victoria – and Golden Beach (50bn cf) in 2004. Other developments include the Gipsy/Rose/Lee (7mn barrels, 150bn cf) and Bambra (2mn barrels, 15bn cf) gas/condensate fields which are to be fed into the Harriet area facilities at Varanus Island and are due onstream in 2002 and 2004 respectively.

The Kipper oil and gas field (13mn barrels, 575bn cf) is due onstream in 2004. The recent liberalisation of the gas market in Victoria and the construction of the Eastern Gas Pipeline interconnection with New South Wales is expected to benefit the development of Kipper, facilitating the sale and transmission of competitively priced gas into NSW and Victoria from both existing Gippsland fields and new developments within Victoria.

BHP recently announced that it had received approval for the development of

the Echo/Yodel gas condensate field on the North West Shelf, Western Australia. The field is located south of the currently producing Goodwyn A platform, and is initially scheduled to produce some 30,000 b/d of condensate. Production is expected to commence in 2002 and will enhance condensate production from the larger Goodwyn field facilities. The field is expected to produce 51mn barrels of condensate and LPG, together with 0.4tn cf of gas over a four- to five-year period.

One of the larger development projects is the Greater Gorgon gas fields project, comprising the Gorgon, Chrysaor, Dionysus, West Tyral Rocks and Spar fields, located 200 km offshore the Burrup Peninsular. Proven reserves (independently certified by Netherland Sewell & Associates of Dallas, Texas) are put at 13.8tn cf of gas, including 9.6tn cf for the Gorgon field itself. Proven and probable reserves exceed 17.6tn cf and possible reserves extend the total to 21.5tn cf. It is planned that the reserves will support a major LNG development, as well as provide gas to the domestic market.

The Gorgon development plan is based on a staged development of two liquefaction trains, each capable of producing up to 4.3mn t/y. Feedstock for the plant would be supplied initially from the Gorgon field, starting in North Gorgon. The Chrysaor, Dionysus, West Tyral Rocks and Spar fields provide opportunities for contract extensions, expansion of the number of liquefaction trains or domestic gas sales.

The 'base case' development scenario comprises a series of subsea well clusters in around 200 metres water depth in the North Gorgon field. The subsea wells will be connected via gas gathering lines to a concrete gravity platform in 120 metres water depth to the east of the field. Raw gas will flow to the platform for separation, dehydration and, later in the project, compression. Dry gas will then be transported via a 230-km subsea trunkline to a liquefaction processing plant on the Burrup Peninsular.

A stand-alone liquefaction, storage and LNG shipping facility located immediately south of the existing North West Shelf LNG plant (see later) is under consideration, together with the possibility of integrating with the North West Shelf facility. Studies have also been undertaken to consider alternative project sites, including Thevenard Island, in addition to options involving a floating LNG plant and an artificial concrete island. The outcome of these studies has not been released.

Wood Mackenzie points out that the economics of the potential developments located offshore Australia may be affected by the 'New Business Tax System' that was announced by the Australian Government in September 1999. The new system proposes to lower the corporate tax rate from 36% to 30% from July 2001. 'In addition, the charges will abolish accelerated depreciation and move to a system whereby the asset will be depreciated over its "effective life". This would have a significant impact on various oil and gas projects coming onstream from 1 July 2001.' However, the Australian Government is understood to have indicated that it would be prepared to consider special tax breaks for large, capital intensive projects.

North Rankin A platform *Photo courtesy of Woodside*

There have been a number of licence changes over the past 18 months, including the acquisiton of all Premier Oil's interests in exploration permits covering the Carnarvon, Perth, Bass and Vulcan Basins by Australian Worldwide Exploration (AWE) in 1999. AWE also took over Omega Oil, which held a 24.99% stake in the Katnook area located in the onshore sector of the Otway Basin. Chevron took over operatorship of West Australia Petroleum's (Wapet) interests in the Barrow Island oil field and Thevenard Island oil and gas fields earlier this year. Shell sold its 28.57% and 35.71% stakes in the respective projects in 1999 to Santos for A$240mn, as part of a drive to scale down its oil and gas presence in the area. Barrow Island is estimated to hold reserves of 90mn barrels of oil, while gas reserves at Thevenard Island are put at 14mn barrels of oil and 40bn cf of gas. Chevron also took over Wapet's stake in the Gorgon development (see earlier).

A record 86 areas offshore Australia were released in the 2000 licensing round, 28 more than in 1999. Areas open to bidding included 67 areas offshore Western Australia, six in the territory of Ashmore and Cartier Islands, five offshore Victoria, four offshore the Northern Territories, three offshore Queensland and one in the Bass Strait offshore Tasmania. Bids for 47 of the areas on offer closed on 2 November 2000. Bids for the remaining 39 are to close on 3 May 2001.

Earlier in the year, five exploration licenses were issued for the Cooper Basin, South Australia, and are forecast to generate A$20mn in investment in the region. Three licences were awarded to Australian Canadian Royalties, and one each to Australia Crude Oil Company and a joint venture of Beach Petroleum and Magellan Petroleum. Kerr-McGee was awarded five deepwater permits in the Outer Browse Basin. It now holds 50% stakes in WA-301P and WA-304P and 33.33% interests in WA-302P, WA-303P and WA-305P.

More recently, eight exploration permits were awarded in the Exmouth, Broome, Carvarvon and Browse Basins offshore Western Australia. Two permits went to Shell; two to BHP and Kerr-McGee; three to BHP, Texaco and Kerr-McGee; and one to Antrim Energy and Rawson Resources. The companies are expected to invest A$283mn ($167mn) on exploration in the region over the next six years.

Australia also has access to the reserves in the Timor Sea, in the Timor Gap Zone of Cooperation (see November issue). The region's $2.5bn Sunrise gas project is to commercialise the Sunrise and Troubadour gas fields, operated by Woodside and held jointly with Shell, Phillips Petroleum and

***Northern Endeavour* FPSO in the Timor Sea.** *Photo courtesy of Woodside*

Osaka Gas. The Greater Sunrise fields contain an estimated 9.16tn cf of gas and have the potential to alleviate concerns about eastern Australia's reliance upon maturing and declining gas fields.

In early 2000, Woodside and Shell signed a Letter of Intent with Methanex covering gas deliveries from the Greater Sunrise fields to a proposed A$1.5bn methanol and syngas plant near Darwin. The initial development will bring natural gas 500 km from the Timor Sea to the Gunn Peninsular near Darwin, supplying it to the Methanex plant as well as to other customers in the Northern Territory and to Mt Isa in Queensland. Gas deliveries from the Sunrise project are slated to begin in 2005.

Gas-to-liquids (GTL) opportunities are also being pursued in the country, with Syntroleum's 10,000 b/d Sweetwater GTL project currently under development on the Burrup Peninsular and due onstream in 1Q2001. Ivanhoe Energy recently signed a Letter of Intent to participate as a partner in the project, and is to fund $2mn for front-end engineering and other project development costs. It also plans to acquire a further 13% stake in the project for an additional $19mn.

The Australian Government, earlier this year, acquired a preferred country licence agreement for Syntroleum's GTL technology. The A$30mn agreement, gives Australia the rights to use the Syntroleum process for converting natural gas into synthetic fuels and provides a reduced royalty structure for GTL synthetic fuels plants. It is understood that Australia is the first nation to licence the Syntroleum process.

The government also approved a A$40mn, 25-year loan to Syntroleum to support further development and commercialisation of GTL technology in Australia. Syntroleum is to work with approved Australian universities and other research institutions under the terms of the loan agreement.

Other recent developments include the signing of Letters of Intent by the six North West Shelf LNG sellers with Tokyo Gas Company and Toho Gas Company of Japan for the sale and purchase of LNG from the North West Shelf in Western Australia. The contract covers the supply of LNG over 25 years, beginning in 2004. Tokyo Gas is the largest gas utility in Japan, accounting for 40% of total Japanese gas sales. Toho Gas is Japan's third largest gas utility and services customers in the industrial centres of Nagoya and Yokkaichi. Participants in the North West Shelf LNG venture are: Woodside Energy (operator), BHP Developments Australia, BP Developments Australia, Chevron Australia, Japan Australia and Shell Development (Australia) – all holding equal 16.67% stakes. It is anticipated that further Letters of Intent will be signed with several other Japanese customers in the coming months, and that the final investment decision to build an additional LNG production train with a capacity of up to 4.2mn t/y will be made early next year. The existing LNG plant on the Burrup Pensinsular is currently operating at around 7.3mn t/y.

Woodside reports that the joint venture partners are to resume oil exploration on the North West Shelf. Plans include exploration near the currently producing 115,000 b/d Cossack-Wanaea fields and drilling of the Castor-1 well near the undeveloped Dixon field. Woodside also plans to have completed drilling 17 wells in 2000, in a bid to offset a forecast decline in liquids production from the Laminaria field and the North West Shelf. It has also committed to drilling three wells that could tie back to the Legendre field in the Carnarvon Basin, in which it holds a 45.9% stake.

New Zealand

The reserves to be developed in New Zealand over the next six years are split 40:60 between gas and oil. Future field developments include the Maari oil field, with 46mn barrels of reserves – due onstream in 2002 (see **Table 1**). The STOS-operated field is expected to be developed via four multilateral horizontal production wells in addition to the Maari-1 well and two water injection wells linked to an FPSO.

The Kauhauroa gas field, also due onstream in 2002, is the first commerical hydrocarbon discovery outside of New Zealand's Taranaki Basin. Field reserves are put at 170bn cf of gas. According to Wood Mackenzie, the preferred development option for the field involves the construction of a 120-km pipeline south to the towns of Napier and Hastings. 'The gas market at Hastings is quite small around 2–3bn cf/y. Development of the field will therefore most likely necessitate a link to the North Island gas reticulation system via Hastings and the possible expansion of the reticulation network to Napier,' states the analyst.

Gas reserves are being actively pursued in New Zealand, driven by the need to prove up competively prices gas to secure additional contracts with the Methanex methanol plants onshore Taranaki and also to meet future gas demand.

In past years, all open acreage in New Zealand has been available through the Acceptable Frontier Offer Scheme. However, in 1999, the government introduced a formal bidding round for onshore Taranaki acreage in which all six permits on offer were successfully awarded. Another onshore Taranaki round is expected to be announced before the close of the year. All other areas of New Zealand continue to be available for exploration on the basis of Acceptable Frontier Offers.

Recent discoveries include Fletcher Challenge Energy's Pohokura gas field offshore the coast of North Island.

Country/Field	Operator	Oil or Gas output	Start-up date	Oil res. (mn b)	Gas res. (bn cf)	Capex ($mn)	Production system
AUSTRALIA							
Angel	Woodside	gas/cond	2010+	–	1,800	–	platform
Baleen (Bass Strait)	OMV	gas	2001	–	100	–	–
Bambra	Apache	gas/cond	2004	0.7	30	–	wellhead plat via Harriet
Brecknock/Scott Reef	Woodside	gas/cond	2005+	228	18,400	–	poss LNG development
Chrysaor*	Wapet	gas	2002*	40	2,600	150	*part of A$10 bn project
Dionysus*	Wapet	gas	2010	–	350	–	poss LNG development
Dixon-Castor	Woodside	oil/gas/cond	2005+	–	–	–	–
Dockerell/Keast	Woodside	oil/gas/cond	2005+	–	–	–	subsea to Echo/Yodel
Echo/Yodel	Woodside	gas/cond	2002/5	51 (cond)	400	–	2 subsea via Goodwyn A
Enfield/Vincent	Woodside	oil/gas	2005	71	–	–	–
Evans Shoal	Shell Australia	gas	2005/9	–	10,500	–	Darwin LNG, 7.5 mn t/y?
Gypsy/Rose/Lee	Apache	oil/gas	2002	7	150	–	wellh'd plat to Varanus Is
Golden Beach	Santos	gas	2004	–	50	–	–
Gorgon*	Wapet	gas	2002*	14 oil,50 cond	6,600	–	poss 6mn t/y LNG plat
John Brookes	Mobil	gas/cond	2002?	–	–	–	–
Kipper (Gippsl'nd Basin)	ExxonMobil	oil/gas	2004?	13	575	263	–
Legendre area	Woodside	oil	2001	60	–	92	jack-up plat,offshore load
Loxton Shoals/Sr/Trb	Woodside	gas	2005/09	–	5,000	–	Darwin LNG, 7.5 mn t/y?
Macedon/Pyrenees	BHP	gas	under eval	–	–	–	–
Manta/Basker (Bass St)	Shell Australia	oil/gas	2003/6	26	260	–	FPO and subsea
Minerva (off Victoria)	BHP	gas	2002?	1	360	–	subsea or monotower
Nappamerri Trough	Santos	gas	end-03	–	–	–	–
Nasutus	Apache	oil	under eval	–	–	–	–
Petrel/Tern	Santos	gas	under eval	–	2,700	–	–
Rankin-Sculptor	Woodside	gas/cond	2005+	–	–	–	subsea to Echo/Yodel
Ramillies	BHP	oil	2002+	2	–	–	–
Reindeer	Apache	gas	under eval	–	350	–	–
Scarborough	ExxonMobil	gas	under eval	–	8,000	4,700	supply proposed LNG?
Searipple	Woodside	gas/cond	2005+	–	50	–	Perseus dev via N Rankin
Spar*	Chev/Tex/Ampol/Shell*	gas	2002*	–	–	–	–
Tenacious	OMV	oil	2001	5	–	42	tie-back to Jabiru
Tern/Petrol B'nap'te Glf	Santos	gas	2005	–	3,000	–	platform or FPS
Tidepole	Woodside	cond/gas	2013	14 (cond)	430	–	tie-back to GWA
Vincent-Enfield	Woodside	oil	under eval	20	–	–	–
West Tyral Rocks*	Wapet	gas	2010*	19 oil,21 cond	1,600	–	–
Wilcox	Woodside	gas/cond	2010	–	300	–	via Echo/Yodel Goodwyn
Woolybutt	British-Borneo	oil	2001	25	–	70	FPS
Yolla (Bass Basin)	Origin Energy (ex Boral)	gas/cond	2003	45 cond	300	240	platform
KEY DISCOVERIES							
Bellerphon	Apache	oil	–	200?	–	–	–
Cornea WA-241-P	Shell	oil	–	500?	–	–	–
Jacaranda Otway Basin	Boral Energy	oil	–	–	–	–	–
Keast	Woodside	gas/cond	–	–	–	–	tie-back to Goodwyn
Laverda	Woodside	oil/gas	2005?	100+?	–	–	with Enfield/Vincent
Lynx/Vega	Woodside	gas	–	–	–	–	–
Sub Total				**1,411.7**	**63,905**	**5,557**	
TIMOR GAP-ZOCA							
Bayu/Undan	Phillips	cond/gas	2004	404	–	1,696	3 platforms, Ph1 liquids
Bayu/Undan	Phillips	gas/LNG	2005/6	–	3,400	–	phase 2 LNG
Greater Sunrise	Woodside	gas/cond	2006	–	9,160	–	–
Jahal	BHP	oil	–	–	–	–	–
Laminaria East	BHP	oil	–	–	–	–	close to Buffalo field
Sub Total				**404**	**12,560**	**1,696**	
NEW ZEALAND							
Kauhauroa	Westech	gas	2002	–	170	–	–
Kupe South	Fletcher Challenge	gas/oil	2004	4	264	250	platform
Maari	STOS	oil	2004	4	–	–	–
Mangahewa	Fletcher Challenge	gas	2004+	–	101	213	onshore
Pohokura	Fletcher Challenge	gas/cond	2004	40 (cond)	750	–	–
Sub Total				**48**	**1,285**	**463**	
GRAND TOTAL				**1,863.7**	**77,750**	**7,716**	

**Greater Gorgon field development*

Table 1: Current and planned field developments in the Asia-Pacific region *Note: See November issue for Part 1 of the table*

Reserves are put at 40mn barrels of condensate and 750bn cf of gas, with first production slated for 2004.

In mid-2000, New Zealand Oil and Gas (NZOG) announced plans to drill 11 wells in Australia and New Zealand during the 2000/2001 financial year. The prospects to be tested cover a range of objectives and play styles, from appraisal wells designed to increase oil reserves and flow rates from existing production licences, to wildcat drilling. In Taranaki, the work programme includes the drilling of an exploration well near the Ngatoro oil field and testing of the Opito and Tui prospects.

Looking at recent M&A activity, Shell is currently seeking New Zealand antitrust clearance to acquire the New Zealand operations of Fletcher Energy Challenge. Shell proposes divesting a range of assets in the merger, including Fletcher Energy's Challenge Petroleum fuel retailing division and its New Zealand Refining operation. It also proposes to sell Fletcher's stake in New Zealand's undeveloped Kupe gas condensate field and its interests in the onshore Taranaki Kapuni gas field. A decision is expected to be announced by the New Zealand authorities as *Petroleum Review* goes to press (see p8 for latest details).

Woodside hits it big

Last month Woodside Petroleum made what was reported to be the largest oil discovery of the past five years on Australia's North West Shelf. *Jeremy Cresswell reports.**

The still independent Australian company's latest find is Laverda in licence WA-271-P, where a 70-metre thick pay zone – 9 metres of gas and 61 metres of oil – was located in 850 metres of water.

While news of the discovery helped lift Woodside's share price, the find will have to be appraised before recoverable reserves can be gauged. To that end, further 3D seismic is being shot with a view to increasing coverage of the permit acreage from 13% to 32%.

Laverda continues Woodside's run of luck, following close on the heels of the Enfield discovery some 13 km distant, whose reserves are provisionally put at around 64mn barrels of oil.

It appears too that Laverda is larger than both Enfield and another discovery in the same general area – Vincent, which is already the subject of development proposals based on a production ship. Collectively, the three fields may hold more oil than Laminaria/Corallina, whose reserves are put at some 190mn barrels.

However, unlike the Timor Sea sister fields, which Woodside shares with Shell and BHP, the Perth-headquartered company owns all the permits in which Laverda, Enfield and Vincent are located.

More to come

Woodside's latest success is excellent news for Western Australia and the view at the state's Department of Minerals and Energy is that more finds like this can be expected. Indeed, Woodside is hoping its run of luck will be sustained with Gaea, a wildcat spudded in the WA-1-L joint venture in November by the semi-submersible *Marine 500*. The target depth is 3,950metres. The question at Woodside is: 'Will Gaea deliver the goods by Christmas 2000?'

In 1999, more than half the wildcats drilled onshore/offshore Western Australia came good and the expectation is that a similar level of success can be maintained over the next couple of years at least.

Richard Craddock, Deputy Director of the Petroleum Division at Western Australia's Department of Minerals and Mining, is convinced of this, given that the hunt for deepwater hydrocarbons has barely begun, as has the quest in onshore areas such as the vast Canning Basin where only 180 wells have been drilled to date.

To put Canning in context, the basin covers an area half as large as Texas or Alberta. More than 500,000 wells have been drilled in the Michigan Basin and over 200,000 in Alberta.

Recent seismic mapping of the Western Australian basin has delineated a number of structures with the potential to hold billions of barrels worth of crude and trillions of cubic feet of gas.

Craddock reckons the state is on a roll when it comes to exploration drilling, pointing out that, in 1999, a total of 48 wildcats were drilled; the 2000–01 fiscal tally will be 52 commitment wells, then 47 the year after. Current total exploration commitments stand at around A$1.64bn.

'Things are more than ticking away nicely here. I've been here four and a half years and the pace of activity is amazing. We're just about having discoveries on a weekly basis. It's the quality of seismic data that's making the difference as the surveys are also looking at potential offsets [satellites] to existing structures.'

He was referring to the fact that a significant amount of fresh seismic had been shot lately by vessels such as *Geco Eagle* and *Ramform Challenger*. A massive 34,000 line-km of 2D was acquired in Western Australian waters during 1999–2000 fiscal, plus around 13,000 sq km of 3D. The 2000–2001 target is at least another 30,000 line-km of 2D and 7,000 sq km of 3D.

Opening gas export markets

Craddock says the exploration pace had been sustained at a fairly high level despite the late 1997 through early 1999 oil price slump. This applied both to seismic and drilling. 'The [drilling] success rate has been phenomenal at 56%. The potential is so high here, but it needs the LNG markets to kick in properly before things really take off.'

And therein lies the rub. Australia possesses huge gas reserves but the pace of development is governed by what can be sold overseas. So far, Japan has been the main LNG customer (see p12), but the Western Australian Government and the companies are hopeful of being able to open up further markets.

Craddock says efforts are being made both with China and India. While agreeing that India had so far tended to look towards the Middle East in that regard, he says Woodside is hopeful of developing an LNG market in the Indian subcontinent. As for China, further overtures will be necessary before anything like tangible progress can be claimed.

Oil holds the purse strings

Western Australia possesses considerable mineral resources, but oil currently accounts for the bulk of royalties paid. Oil companies handed over a grand total of A$345mn for fiscal 1999–2000, which equates to 44% of all resource royalties paid to the state government over that period. It is little wonder Craddock is keen to foster further growth of the state's petroleum industry.

**Jeremy Cresswell is Aberdeen Business Editor for Scotland's national daily newspaper* – The Scotsman.

Internet age to reshape European fuel retailing

Online fuel retailing could be available within Europe by 2002, and is likely to prove popular with price sensitive European motorists. Increasing online consumerism combined with heightened price sensitivity, and websites facilitating cost savings, makes Europe the ideal market to launch online fuel services, reports *Shon Loth*, Oil Analyst, Datamonitor.

The Internet age is reshaping retail markets and driving new business practices across all industry segments, and the forecourt retailing industry is no exception. E-business has already delivered massive savings in oil trading, logistics management and procurement.

The oil industry is now rapidly pursuing e-commerce strategies within the downstream sector. Oil company executives are increasingly aware of the explosion in online consumerism, and are aware of the threat posed by new entrants attacking the downstream value chain. Providers of online retail services in the US have already attempted to enter the fuel retailing value chain by engineering new business processes enabled by the Internet. Some companies are even attempting to sell petrol over the Internet by aggregating and channeling consumer demand.

Bright prospects

Datamonitor believes that new e-commerce initiatives within fuel retailing are well suited to the European market and would prove popular with European consumers. Revenues generated through B2C (business-to-consumer) online spend in Europe are forecast to grow from $12bn in 2000 to $172bn by 2004 (see **Figure 1**). These revenues will come from the rising number of online consumers in Europe, which are forecast to grow from 63mn in 2000, to 178mn by 2004.

Online fuel services are also forecast to be targeted at the commercial road traffic market in an attempt to capture some of the exploding B2B (business-to-business) revenues. The B2B segment is forecast to see an online spend of $395bn in 2000, growing to $1,647bn by 2004. Forecourt retailers and other online service providers are thus in an ideal position to capture a portion of this revenue if they are able to develop suitable services. Forecourt retailers are discovering that the Internet is more than a public relations tool – it is transforming the relationship between retailer and consumer. It is also opening new opportunities for oil companies to offer innovative and high value added services to consumers.

E-market entrants

Research indicates that online fuel retailing services are already being introduced to the market via two main channels, namely through the formation of e-communities, or through the extension of existing oil company (OilCo) online services. Crucially, both business channels are reliant on some form of demand aggregation.

- **E-communities** – An impetus for online fuel retailing is likely to come from companies that create and manage successful e-communities. By pooling the collective demand of their Internet community they are able to secure discounts through bulk purchasing. These companies are predominately forecast to be new Internet companies.
- **OilCo online services** – The range of online services offered by OilCo's is rapidly growing, providing a unique opportunity to provide added value services to their existing client base. OilCo's frequently use their fuel card and loyalty card services as an ideal platform from which to launch online services.

The introduction of a successful online fuel retailing service depends on the ability to aggregate and channel consumer demand, as well as maintaining the necessary infrastructure and resources. New 'dot.com' companies have already proven successful at aggregating demand across a number of vertical retail channels and there are already signs of attempts to attack the fuel retailing value chain. The challenge for any e-retailing site is to use aggregated consumer demand in a way that allows the return of derived cost savings back to the consumer.

Research into online consumerism demonstrates that there is already a considerable appetite for buying an increasingly diverse range of products over the Internet. New Internet services are likely to incorporate fuel retailing services, either to enhance customer loyalty schemes, or to offer price reduction. While it is unclear which company will seek to take the first mover advantage in Europe, the concept of online fuel retailing services remains viable. Furthermore, these new services are best suited to the price sensitive European markets.

Multi-speed development

Websites related to forecourt retailing are all at different stages of development, and not all display the same goals and aspirations. Some sites are being developed to become autonomous, profitable businesses, while others are attempting to raise brand awareness. Nevertheless, all websites must deliver one of two things in the long term – they must either hit a revenue level which exceeds the costs of running the site, or they must add real value to the consumer, and hence strengthen the business proposition through increased consumer loyalty. Websites that fail to perform either of these two functions will be a financial burden and will not justify their expense in the long-term.

There is a clear lifecycle for the development of Internet services, which demonstrates how forecourt retailers are developing online services (see **Figure 2**). Websites are often initially created as public relations and marketing tools. The second stage moves beyond the functionality of stage one to include basic merchandising features. This has been driven by a massive expansion in the use of the Internet as a business tool.

The third stage of the product lifestyle is where forecourt retailers are attempting to harness their customers into an Internet community with shared values and needs, and hence create the opportunity to cross-sell a diverse range

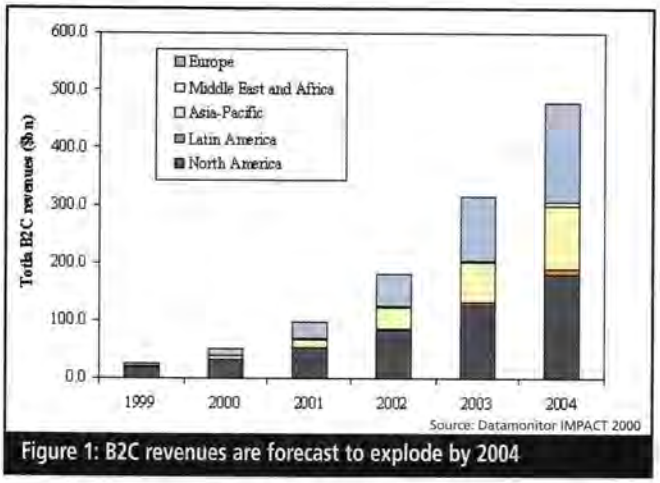


Figure 1: B2C revenues are forecast to explode by 2004

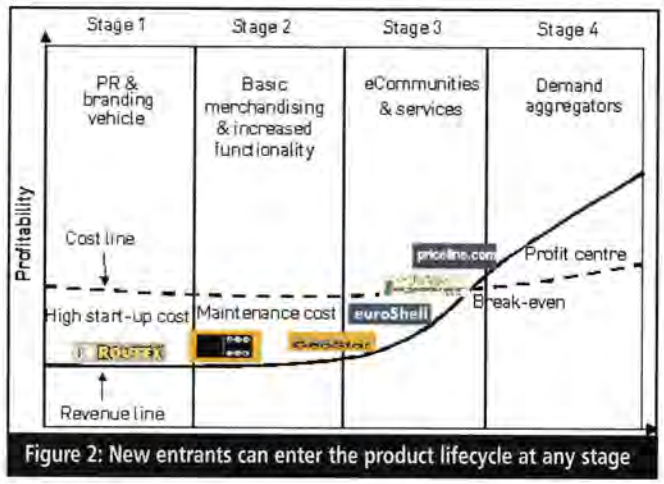


Figure 2: New entrants can enter the product lifecycle at any stage

of goods and services. Demand aggregation is classed as the fourth stage where Internet sites are able to harness and aggregate demand from their e-community. Oil companies have typically developed their websites in accordance to this product lifecycle but are now facing the threat of new companies entering the retail value chain. The most potent threat is likely to come from the 'dot.com' companies that are able to enter the product lifecycle directly at the final stage.

E-communities and services

Layover.com is a good example of an Internet service that has established a successful e-community of commercial drivers. The website offers members a variety of business and lifestyle services, many of which are specifically designed to help build the sense of community, and increase the level of interaction between community members. For example, the site offers a variety of chat rooms, and frequently runs petitions in order to pool opinion over issues which affect the commercial driver, such as the level of fuel taxation. **Layover.com** then channels this pooled opinion, and uses it to lobby more effectively on behalf of its members.

In order to secure discounted goods and services, the website acts as an advocate for members by pooling demand and approaching suppliers. For example, community members are currently able to enjoy discounted vehicle insurance through an associate online provider. **Layover.com** is currently planning to introduce a demand pool for diesel for its individual owner/drivers and for companies with small fleets, and is also reviewing a European product launch.

Priceline.com is a demand aggregator that currently provides online retail services across a number of consumer markets in the US, including hotels, travel and cars. The latest service to be launched was the sale of petrol over the Internet, direct to the private motorist. In order to use the service, private motorists access the website and stipulate which type of fuel grade they want to purchase, enter their postcode and then select up to three local service stations from which they are prepared to collect the fuel. In order to collect the pre-purchased discounted fuel, motorists must go to their allocated service station, taking the pre-selected grade of petrol. The vehicle is refuelled as normal, and rather than paying with the usual debit or credit card, the customer uses their special 'petrol card'

This service went against the traditional wisdom that you can't sell petrol over the Internet and was positioned to capture the rise in online consumerism. Sales reached over 2mn gallons of fuel during July 2000 alone, to over 100,000 customers in the US. During August 2000, the company issued a further 900,000 petrol cards to pre-registered users. Private motorists were making savings of 15 cents to 20 cents per gallon, which was equivalent to an 11% discount, and the service was forecast to attract up to 5mn customers by the end of the year. However, the service was suspended in November 2000 because Webhouse, a subsidiary of **Priceline.com**, ceased trading. The withdrawal of venture capital by investors was sparked by fears over the rising costs of Webhouse's other operations, but also impacted upon the gasoline service that appeared to have a sound business model.

Securing customer loyalty

Retailers who offer online services to motorists stand to benefit from increased consumer loyalty, as online consumers become tied-in to short-term contracts, or they are 'incentivised' to be loyal. If fuel retailers can cement customer loyalty through new schemes they can have an impact on footfall on their forecourt.

Increasing the amount of footfall on the forecourt is particularly important in Europe where fuel retail margins are very low. Profits generated from forecourt retailing are now coming almost exclusively from the forecourt shop, hence increasing footfall is key in order to grow non-fuel sales. Prior to the recent suspension of online fuel sales in the US some 43,000 service stations had agreed to participate in the scheme.

Looking to the future

Despite the difficulties in implementing an online petrol buying service, the anticipated growth in online consumerism across Europe means that the concept remains viable. However, there are several problems which online fuel retailers will have to overcome if they are to build a successful business model within Europe.

A major obstacle will be to persuade the investor community in the present climate. In a low margin and high tax market like Europe, companies may not be able to offer the significant discounts necessary to attract customers. Although the possibility of cheap petrol could well attract price sensitive consumers, success depends greatly on the cooperation of the oil companies who may see online fuel sales as a threat to their core business.

Nonetheless, online fuel retailing services are particularly well suited to countries where consumers are price sensitive and are prepared to search for cheaper fuel.

While the signs are that 'dot.com' companies will make the first attempt to sell fuel over the Internet, OilCo's are in a unique position to offer online services through the development of existing fuel card and loyalty card services. ●

For further information about Datamonitor's report entitled E-commerce in Forecourt Retailing, *please contact Datamonitor on Tel: +44 (0)207 675 7000 or e:* **ensales@datamonitor.com**

E-commerce – is the energy industry really managing it?

With the widespread adoption of e-commerce now inevitable in most industries, many companies have now embarked on the journey that will take them into this exciting new world. But the urgency associated with e-commerce means that these initiatives often flounder amid a welter of conflicting priorities, with no clear vision of the overall project or which issues need to be addressed most urgently, reports *Andersen Consulting.**

Andersen Consulting recently conducted a survey involving executives working in the energy industry using a simple web-based diagnostic tool designed to evaluate how a company was managing its e-journey. The study comprised of a series of Internet business related statements that required judgement responses in the following areas:

- capabilities required to be successful;
- motives for embarking on e-commerce; and
- internal and external challenges.

The results reveal some startling revelations and insights for the energy industry as a whole.

Capability gaps

The survey indicated that energy companies feel inadequately prepared for e-commerce – there is an immense gap between the capabilities that the companies require and what they actually have. For example, 65% of those surveyed saw 'managing a flexible and responsive organisation' as being the most important capability. Yet only 5% of the sample felt they had that capability – a clear action priority. (See **Figure 1**)

Motives for move

Respondents also indicated that they are not threatened by dot.coms nor are their motives driven solely by the need for shareholder returns. Instead, they use e-commerce to respond better to customer needs and to operate more efficiently, thus increasing their market share. (See **Figure 2**)

Internal and external challenges

The major internal challenge to e-commerce is cited as a lack of a clear e-commerce vision, not surprising given the variety in strategic motives. Top external challenges were creating new alliances and partners; harnessing new technologies and redefining the industry. (See **Figures 3** and **4**)

The study also captured individual's perceptions of e-commerce activities in four areas deemed critical for a successful transition to e-commerce:

- *Leadership* – Does the leadership team have the necessary knowledge of e-commerce to exploit opportunities? Does it have a powerful, shared e-commerce vision and the energy and charisma to push it through?
- *Ownership* – Are individuals motivated to succeed and identify solutions? Are they confident enough to experiment and learn, to think creatively and take risks? Are external stakeholders enthusiastic and also actively involved in the journey?
- *Management* – Are the value, progress and appropriateness of e-commerce initiatives being monitored? Is management assessing risk, and managing the expectations of key internal and external stakeholders?
- *Enablement* – Are the right people with the right skills available or being recruited? Is funding available for experimentation? Is the technical infrastructure capable of supporting e-commerce? Can the organisation move quickly enough and operate at 'net speed'?

'Overall, the executives felt that there was strong ownership of e-commerce initiatives, but that the leaders of those initiatives lacked e-commerce "savvy"',says Susie Gear**, Head of e-Journey Management within the Global Energy Practice at Andersen Consulting. 'They also felt that far from acting as an enabler, their existing technology was

Capabilities required to be successful	% Need	% Have	% Gap
Managing a flexible and responsive organisation	65%	5%	60% (LARGE)
Customer relationship management	64%	24%	40% (MEDUIM)
Collaboration across the organisation	63%	13%	50% (MEDIUM)
Learning and renewal	49%	13%	36%
Managing alliance relationships	47%	17%	30%
Channel Management	44%	12%	32%
Evaluating and adopting the right technology	44%	14%	30%
Operating @ net speed	38%	3%	35%
Governance	20%	22%	-2%
Monitoring our competitors	17%	15%	3%
Other	1%	7%	-5%

Figure 1: Capabilities required to be successful

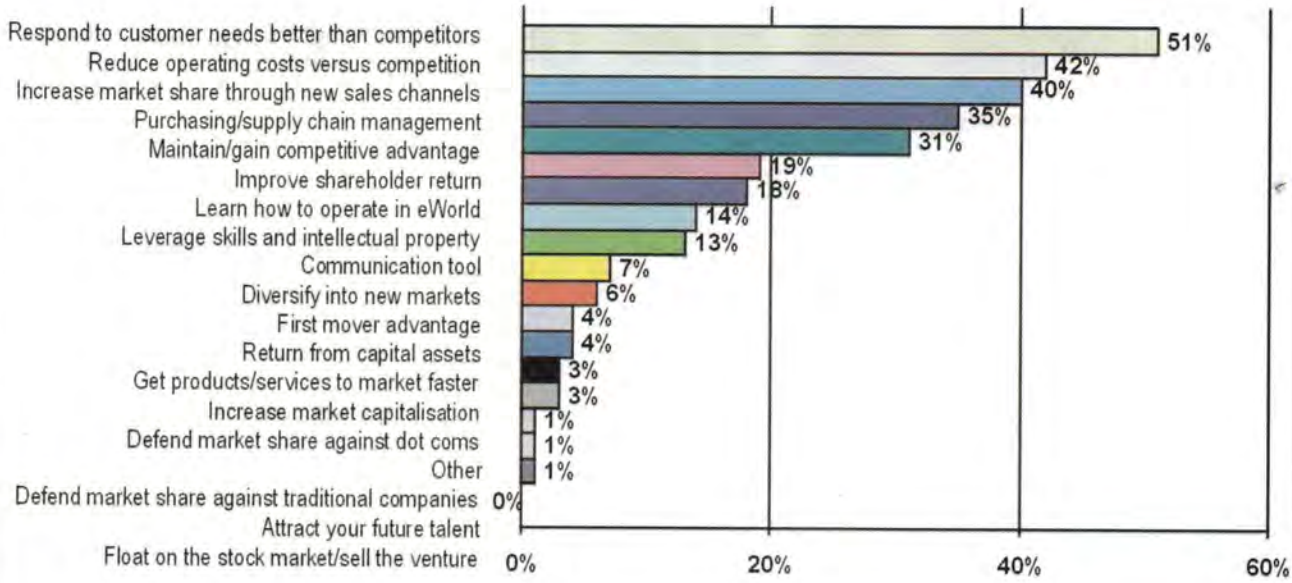


Figure 2: Motives for embarking on road to e-commerce

holding back progress towards e-commerce, while management was inadequate, particularly in addressing key issues.'

These results are common across industries in the early stages of the transition. 'Differences in emphasis in each of these areas will occur not just between organisations and operating divisions, but over the lifetime of the e-commerce journey,' states Gear. 'For example, leadership might be a key factor at the start of a project, whereas towards the end of a project the resource issues around enablement might be more of a priority.'

Steps to success

The key is to identify these gaps early in the transition, and take a balanced approach to all the factors that contribute to success. This approach is being adopted by some energy organisations and places them in a solid position to manage their e-commerce activities in the future.

'Mistakes will be made along the way – the key is to learn quickly and to fix quickly. A good plan implemented today is better than a perfect plan implemented too late,' says one e-commerce executive member.

**Andersen Consulting is to change its name to Accenture on 1 January 2001.*

***Susie Gear, Head of e-Journey Management within the Global Energy Practice at Andersen Consulting can be contacted at* **e:susie.gear@ac.com**

Lack of clear eCommerce vision	62%
Supply of skills and talent	39%
Culture resistance/internal politics	37%
Ability to execute @net speed	30%
Rigid/non adaptive business model	28%
Sponsorship of the vision	21%
Flexible/ scalable technology infrastructure	20%
Narrow focus on own function	19%
Motivation and involvement of employees	19%
Decision making where the action is	13%
Other	7%

Figure 3: Internal challenges

Creating new alliances and partners	58%
Harnessing new technologies	35%
Redefinition of industry	35%
Increasing competitive action	35%
Geographical /cultural	32%
Rapidly changing markets	32%
Managing the shift of power to customers	31%
Competition for talent	12%
Legal/ regulatory ambiguity	8%
Shareholder pressure/ influence	7%
Other	3%

Figure 4: External challenges

Internet in the oilpatch – a year on

Approximately 12 months ago, e-commerce fever began to sweep the oil and gas industry. Reports by analysts reckoned that not only would huge savings be achieved, but that the very fabric of the sector would be transformed as traditional functions migrated to the Internet. *Gordon Cope* reports.

Industry players, both major and minor, jumped onto the virtual bandwagon. With great fanfare, a score of initiatives were announced. Some of the more prominent proposals included:

- **Petrocosm.com** – Chevron and Texaco announced that they would establish a full, Internet-based digital marketplace. The plan was to feature a broad range of services, including catalogues with millions of items for sale, auctions, strategic sourcing and electronic payment.
- **Indigopool.com** – The brainchild of the oilfield services giant Schlumberger, the site was specifically designed for the acquisition and divestiture process of the upstream oil and gas industry. The virtual marketplace would allow oil companies to register properties for sale, and buyers to evaluate their potential through a sophisticated suite of engineering, geological, geophysical and economic software tools.
- **Networkoil.com** – The Houston-based firm proposed a virtual Internet portal aimed at smaller petroleum companies. The electronic exchange would provide a secure, neutral forum for conducting a variety of transactions, including requests for bid, auctions and reverse auctions. More than 30 independent oil and gas companies, representing $11bn in annual capital expenditures, took an equity stake in the company, including Unocal, Burlington Resources and Ocean Energy.
- **e-Energy.com** – e-Energy's virtual marketplace (**mye-Energy.com**) would feature links to a wide range of information, products and services. Production engineers searching for an oil pump, for instance, would be able to not only quickly locate product suppliers within their region, but also obtain an up-to-date name to contact for service.

Reality bytes

Much like a litter of virtual porcupines, some of the projects were hastily conceived, and many of the nascent brood now find themselves scrambling to survive. 'We knew a year ago that the sector would not support the number of independent marketplaces springing up,' says Don Painter, a National Practice Executive for IBM's Business Innovation Services. 'A number of projections published six months ago stated that as many as 80% of the independent marketplaces would go out of business within 18 months, and what we're seeing is pretty close to that.'

'We're in a transition from vision-focus to an execution-focus,' comments Kevin Bartol, Chief Operating Officer of Network Oil. 'We're shifting from dream to reality – what people will actually use.'

'It's a game of musical chairs,' says Brad Gaulin, President of e-Energy. 'Everyone is changing chairs, and when the music stops, everyone is hoping they have a chair to sit in.'

'There definitely is a consolidation of the industry,' states Alexandra Pruner, Vice President of Marketing for Petrocosm. 'It is being driven by a need for capital, customer demand and change in vision.'

Industry insiders estimate that a full-services digital marketplace requires as much as $150mn spent over three years to reach a point of viability. Since the technology rout on the NASDAQ stock exchange in April, however, few venture capitalists have been willing to risk their money on 'dodgy dot.coms.' 'Less-well-capitalised companies are going to the wall and being bought out,' says Bartol.

Secondly, customer demand has not been as enthusiastic as predicted. 'The major limiting factor is the pace at which industry adopts the Internet,' explains Mike Davidson, Manager of Strategy and Business Development at Indigopool. 'At one end you have BP spending $1bn to upgrade their business, and at the other end, you have companies with their heads in the sand, hoping it might go away.'

In order to understand why the oil and gas sector has not warmed to the Internet as quickly as expected, it is illuminating to talk to those who toil in the trenches.

Internet land deal

PanCanadian Petroleum, based in Calgary, owns several million hectares of exploration rights throughout the Western Canada sedimentary basin. When faced with the task of disposing of certain non-core properties, it decided to expedite the process through the Internet. After examining several divestiture services, it opted to create its own land auction site – called LandDeal.

During June, PanCanadian launched the first auction round of non-core properties, listing four blocks of fee simple and crown land, totaling 100 sections. After closure of the auction on 31 August, the bids were opened and the results tabulated. 'The response was a bit disappointing,' says Bob Glass, the Land Coordinator for the offering. 'The block sizes weren't what people were looking for.'

During the second round, begun 25 September, PanCanadian changed the size of some of the parcels and offered six blocks totalling another 100 sections. 'Hopefully, we'll get a better response this time,' says Glass.

Even if the Internet auction of non-core properties proves successful, Glass doesn't expect farm-in deals on core properties (which are a far more valuable aspect of a landman's duties), to achieve any meaningful level of Internet exposure. 'You want to pick your partners and be careful, because you're entering into a long-term arrangement.'

Rob Harris, a Completion Engineer for Shell Canada, is responsible for ordering the myriad of steel, concrete and valves necessary to complete oil and gas wells. 'We have an e-procurement system set up to buy all our tubing for completions,' he notes. 'It eliminates some mix-ups when we talk to so many people and companies.'

Some key suppliers have been slow to commit to Shell's joint venture with Commerce One, however, and Harris must wait for the day when he can finally organise an entire well completion over the Internet. 'We'll be able to

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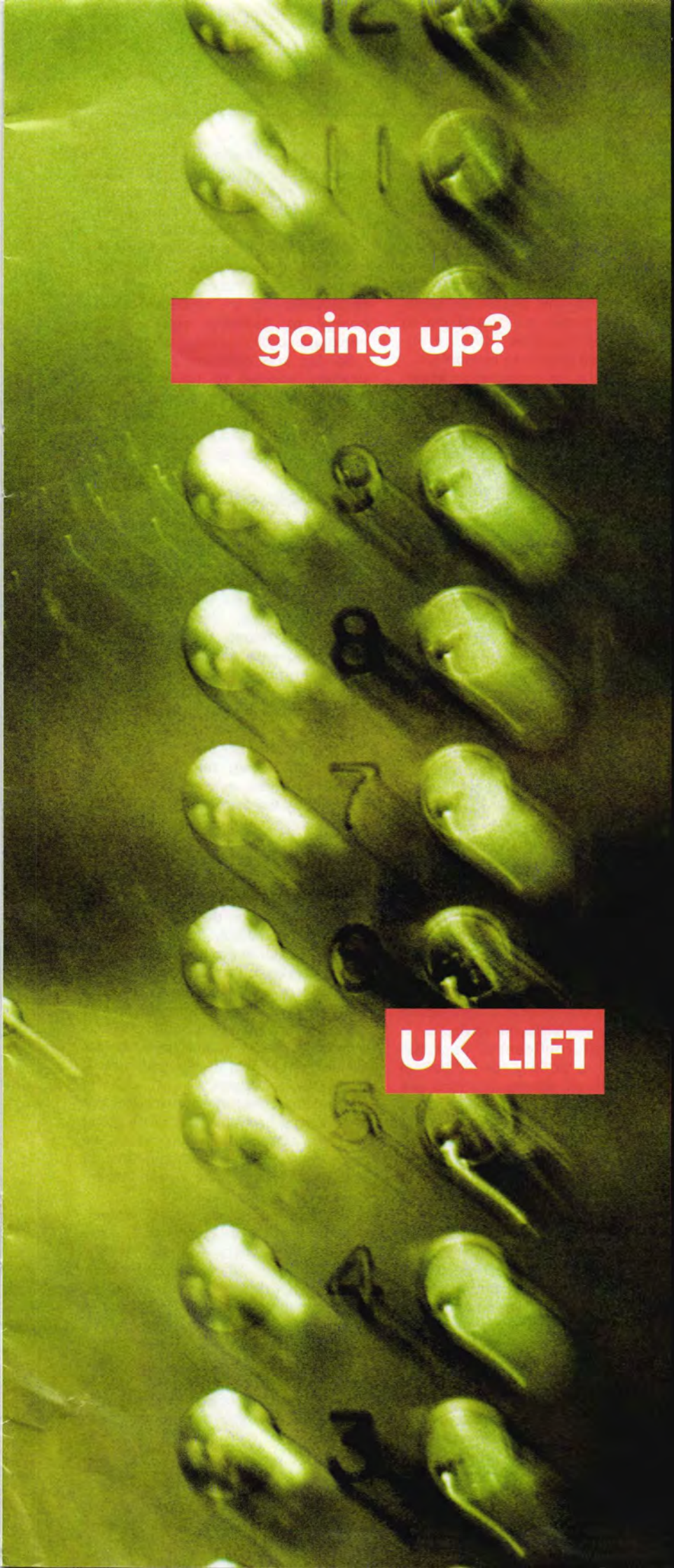

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see more details, and be able to piece things together. It will be a big positive.'

Ken Mitchell is a Senior Geophysical Specialist with Canadian Forest Oil. For the last several years, he has monitored the introduction of various Internet-based geophysical services. 'There have been lots of things coming along, and some are quite useful,' he notes. 'The Geological Survey of Canada has catalogues of magnetic and gravity data that you can order online.'

Reactions within the geophysical profession to the merits of the Internet, however, are mixed. 'The more computer-literate people say: "This is a great way to leverage my time,"' notes Mitchell. 'Others say: "The old ways work well, why change things?"'

Some geophysicists are worried that data might be contaminated during digital transfer. 'With the old way, you have a system in place where quality control is assured.' As a result, many geophysicists have adopted a hybrid approach, using the Internet do a search and identification, then acquiring the data through traditional methods of acquisition.

Security has been another ongoing concern for all industry participants. Proprietary data that has been digitised, such as seismic, can cost millions of dollars to acquire and process, yet certain aspects can be seized by unauthorised third parties. 'One of the key security things to crack is the ability to look at data, but not capture it,' explains Davidson. 'It's still a stumbling block, but we're well on the way to establishing technologies that would, for instance, stop someone from capturing a screen image by printing.'

The continuing lack of industry standards also keeps many potential users sitting on the sidelines. While most of the Internet portals don't demand the purchase of any special software to access their services, features such as e-procurement require expensive back-office systems to reap the potential benefits. Several of the larger players are developing their own proprietary solutions, with no one system emerging as the industry norm. 'It's like a Mexican stand-off, with different groups all trying to build the technology,' comments Bartol.

Why don't the major oil companies simply get together and pick one independent marketplace as the standard? 'The majors just don't want intermediaries between them and their ultimate customers,' says IBM's Painter. 'They will either take a stake to maintain control of an independent marketplace, or maybe use it as a channel where their customers are ultimately led to their own company's marketplace. That is all very consistent with the culture and interest of the big players.'

A light at the end of the fibre optic

With the loss of capital, customers and focus, many Internet service providers have quietly folded their sites and disappeared into the digital darkness. Those that remain are scrambling to establish predominance with the services that have proven to be viable.

NetworkOil is concentrating on its success with the surplus-equipment niche, which, in terms of technology development, is much easier to deploy than a new-equipment marketplace. 'The used-equipment field has a myriad of sellers, and the market is very fragmented,' says Bartol. 'You can easily create an open marketplace and add in people to refurbish and deliver equipment.' In the three months after its used-equipment service went online in July 2000, NetworkOil auctioned more than $15mn in goods. 'We project that figure to more than double by this time next year.'

Others are working to make their service more valuable and secure. When Indigopool went online in April, it planned to offer three levels of service. Level 1 is an electronic listing service, in which oil companies can post basic details of properties for sale. Level 2 is an interactive 'digital data book' where buyers can run interactive models on a property using economic modelling tools. Level 3 is designed to allow customers to evaluate the entire suite of technical data available for a property from their home base.

Indigopool recently launched Level 2. 'The lister does a baseline economic case, and a potential buyer can play what-if games with Merak's WebPeep [economic analysis package],' says Davidson. 'You can spend an hour and get a view if it's going to be worth your while.'

Security of confidential data has always been a priority for IndigoPool clients, and all communications are encrypted using the SSL (Secure Sockets Layer) standard. Customers also want to extend control over who sees their data, however. 'We are now implementing smart cards using the PKI (Public Key Infrastructure) standard,' says Davidson. 'The smart card is like a credit card with a microchip embedded, and it can ID John Smith at Shell.'

Indigopool's attention to details has paid off in custom. The number of visitors to its site has surpassed 1,000 visitor sessions per day. The number of assets posted to the site totals over 450 properties and includes listings from independent producers, international majors, national oil companies, and government entities. 'We started with $10mn in April, and we have around $3bn in properties listed now,' says Davidson.

Petrocosm, with the deep pockets of Chevron and Texaco to back it, is moving ahead with a full suite of software, including back-office systems. 'Our [e-procurement] system, Requisite, is a flexible format that won't lock in suppliers,' says Pruner. 'We will continue designing the underlying technology to facilitate collaboration, sourcing and procurement of services.'

So far, the company's aggressive strategy appears to be paying off. 'Things are going great,' says Pruner. 'We launched the website June 30, and we estimate $30mn of transaction volume in November.'

Strategic alliances

Companies that lack venture-capital angels, such as e-Energy, are seeking alliances. Recently, Brad Gaulin went to Houston and Dallas to confer with many of the main portals, including Petroleum Place, Network Oil and Petrocosm. 'There's the possibility of integrating with another Internet initiative,' he notes. 'We have a [money-making] product we like to call our e-Rolodex that delivers key contacts. It's one piece of a bigger puzzle.'

Some industry players expect the current shake-out in the sector to be largely resolved within the next 12 months. 'By the fourth quarter of 2001, a half dozen companies will have over 75% of the business, and the rest will be specialist Internet companies offering niche products,' comments Davidson.

'I can see half a dozen companies in the next year, but they won't control 75% of the market,' counters Bartol. 'The old model of get-big-fast-and-lock-up-the-market isn't going to happen. I think that you will see a bunch of point solutions that will grow together over time. But to have a consortium of 12 oil companies that will come together and figure it out and lay it out – I don't think that will ever happen.'

Few doubt that Internet services are here to stay, however. 'I think it's going to have a tremendous impact as we move forward,' says landman Paley. 'It will enable one to be aware of the opportunities out there.'

For those companies that cannot wait another year before committing to the Internet, IBM's Don Painter has some helpful advice. 'There are two important things to keep in mind,' he notes. 'Have a well thought out e-marketplace business strategy – decide what marketplaces to participate in, or whether to build your own. Secondly, use an open-standard platform that allows you to move in and out of marketplaces efficiently, so that you are able to plug-and-play.'

Great expectations

E-procurement and B2B (business-to-business) exchanges have gained significant traction in the petrochemical industry and look set for rapid growth. Companies such as ExxonMobil, Shell, BP, Chevron and Statoil have all launched massive e-procurement programmes with ambitious savings targets of about 10% of overall spend. However, as Andersen Consulting's *Stephen A Varley points out, although oil company expectations are great, will the companies really reap the rewards of taking the Internet onboard?**

Research suggests that, over time, major oil companies would be able to generate savings of up to $10bn–$20bn (5%–10% of total spending) per year by switching to e-procurement. In the exploration and production business, a 5%–10% savings rate translates into an appreciable lowering of the cost structure. Consensus among market research firms also shows a significant growth potential for B2B e-commerce, with over 50% of this expected to migrate to exchanges (**Figure 1**). These figures suggest a massive growth in B2B exchange volume transactions with their corresponding savings for buyers and suppliers.

Independent exchanges have typically led the way. Early players include 'WorldOil', 'NetworkOil', 'Oilsite' etc. These independents win on the neutrality front. However, in recent months incumbent industry players have staged a strong entrance into the world of exchanges and have changed the landscape permanently. Examples of such exchanges include TradeRanger (a consortia of 14 oil and gas companies, including Shell and BP) and Petrocosm (ChevronTexaco) in the energy industry and Covisint in the automotive industry. This so-called 'revenge of the bricks and mortars' brings a new dynamic to the B2B exchanges space.

This is not the first time that the petroleum industry has had such big expectations from technology-led change. The introduction of ERPs (enterprise resource planning) came with promises of substantial savings much of which was not realised – why are e-procurement or B2B exchanges any different? The answer to this is simple – they are not. The same potential for a lower than expected return on investment exists for these new technologies as they did for ERP initiatives. The difference is that one hopes that the industry as a whole and the professional services organisations that serve them, have realised that there is more to value realisation than getting to 'go-live.'

As exchanges proliferate, the entire landscape can best be described as confusing to the casual observer. **Figure 2** provides a description of the various exchange classifications.

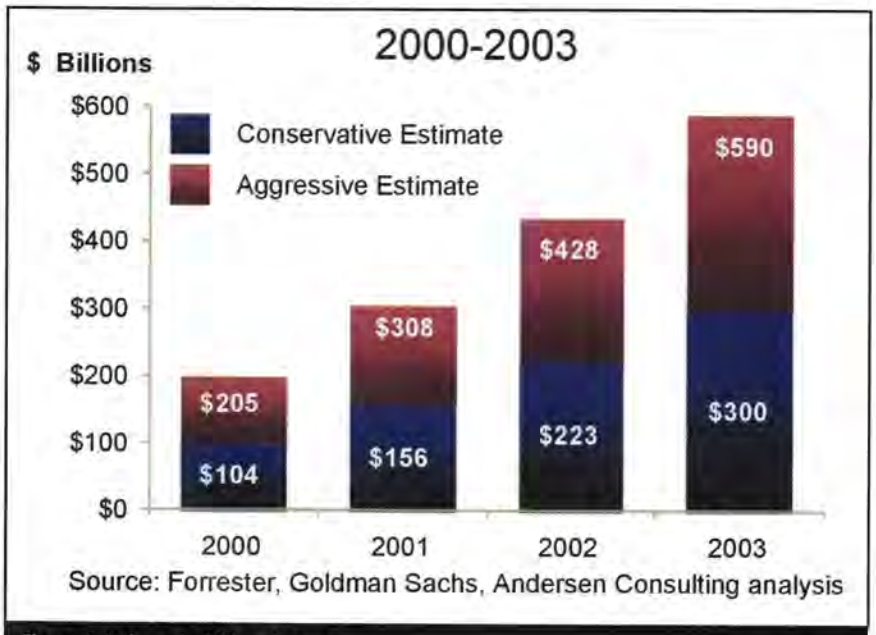

Figure 1: Volume in B2B exchanges

Value proposition

The key stakeholders in an exchange are the buyers, the sellers and the exchange operator. Clearly, for all participants in an exchange there has to be a definitive proposition. The reality of the situation though is that very few, if any exchange, actually have substantive revenues or make money at all. However, it is early days yet – the question one must ask is whether there really is black gold out there?

The value proposition for the parties vary:

For the buyer

- Exchanges enhance market transparency resulting in a more efficient and streamlined procurement process as well as an overall reduction in cost of procurement.
- Further savings come from a reduction in administrative costs. Online procurement can substantially lower the cost of processing a purchase order from about $125–$175 (obtained in manual processes) to about $10–$15.
- Finally, through exchanges buyers can aggregate their demand and

secure further price discounts from suppliers. However, the regulatory authorities do not look kindly upon such practice if it is to the detriment of the overall market place.

For the supplier

- Online collaboration with the buyers provides enhanced demand forecasting and market intelligence (thereby reducing inventory costs), access to new markets, reduced selling costs and a great opportunity to aggregate and thereby fulfil smaller orders. In essence, the exchanges provide suppliers significant opportunity to increase revenues and margins.

For the exchange operator

- The whole operation enables the exchange operators access to revenue generation (through fees for all services provided), possible procurement cost reduction for buyer-centric exchanges and of course, the IPO (initial public offering) valuation for independents.

Overall, the value proposition for all key stakeholders is solid in a well-constructed exchange and such animals do exist.

However, in many cases, exchanges are far from delivering the sort of values highlighted above. There are major buyer and seller concerns which need to be addressed as well as major issues surrounding the exchange infrastructure which make the value proposition more dream than reality today.

Getting it right

Some of the critical success factors for exchanges are discussed below. It is our belief that real value can be delivered to participants if some of these challenges are overcome.

Liquidity/balance in participants

Liquidity is the essence of an exchange. It is the ability to attract both buyers and sellers in equal proportions. In the absence of this, it will be impossible for buyers and sellers alike to transact cost effectively. Similarly, if there isn't enough transaction volume going through the exchange, exchange operators are unable to generate the kind of revenues required to sustain the exchange. Exchanges that are well positioned within an industry have the highest chance of securing such level of liquidity – such as TradeRanger in the energy industry and eSteel in the steel industry.

Funding

An exchange requires substantial financial backing to survive the early years that require significant investment. Positive cash flows are unlikely in the early years as the exchange invests heavily in infrastructure and building of relationships with the participants. Inadequate financial backing is sure to force the exchange into generating quick revenues without establishing the kind of long-term relationships which it requires to function over time. Exchanges owned by industry incumbents are likely to be at advantage with respect to funding as they are usually less pressured to generate short-term revenues.

Classification by	Types	Description	Examples
Target Market	Vertical	Industry or sub-industry specific, offering specialised services and products	TradeRanger, Covisint, ChemDex
	Horizontal	Span across industries offering standardised products and services, primarily in indirect commodities such as computer software and hardware etc.	Barter, eVentory
Ownership (1)	Independents	Exchanges owned by neutral players typically Internet software companies and entrepreneurs.	Intraware, Sciquest, Ventro
	Incumbent industry	Exchanges owned by existing industry players.	TradeRanger, Covisint, GlobalNet Exchange.
Ownership (2)	Buyer centric Seller centric Neutral	Controlled by buyers. Controlled by sellers Controlled by independent (same as independents above)	TradeRanger, Petrocosm NationalOil Well Ventro
Product	Commodity	Trades in specific commodities only, eg grains, electricity etc.	Automated Power Exchange, Altra Energy

Figure 2: A classification of exchanges

Technology

For those B2B exchanges that have access to leading edge technology, it could prove to be a primary source of competitive advantage and a major determinant of success. Such technology should enable the efficient provision of value added services.

Value added services

As exchanges evolve, participants will desire more services beyond the basic order matching. They would provide services from invoice consolidation to guarantees of quality, to taking ownership of assets as they move through the supply chain. These services would therefore serve as attraction for buyers and sellers and provide additional revenue for the exchange operator.

Integration

For an exchange to deliver the value promised, it must be able to integrate its services and functionalities such that transactions are carried out efficiently and at reduced cost. Inability to achieve this is a definite way not to achieve the required level of liquidity.

Stumbling blocks to realising value

The above listed success factors will be harder to achieve in the short term because of a number of challenges:

Challenges for the supplier

- **Cost to enter** – For many suppliers, the cost to enter an exchange can be prohibitive and the incentive even less. Firstly, many suppliers have already invested in their websites and expensive EDI systems with relevant buyers. For such suppliers, the incentive to join an exchange is low. This is compounded by the fact that there are many exchanges and buyers are bound to be spread across these exchanges. For a supplier to access its target markets, it then needs membership of several exchanges. To date, there is no one standard format for interaction

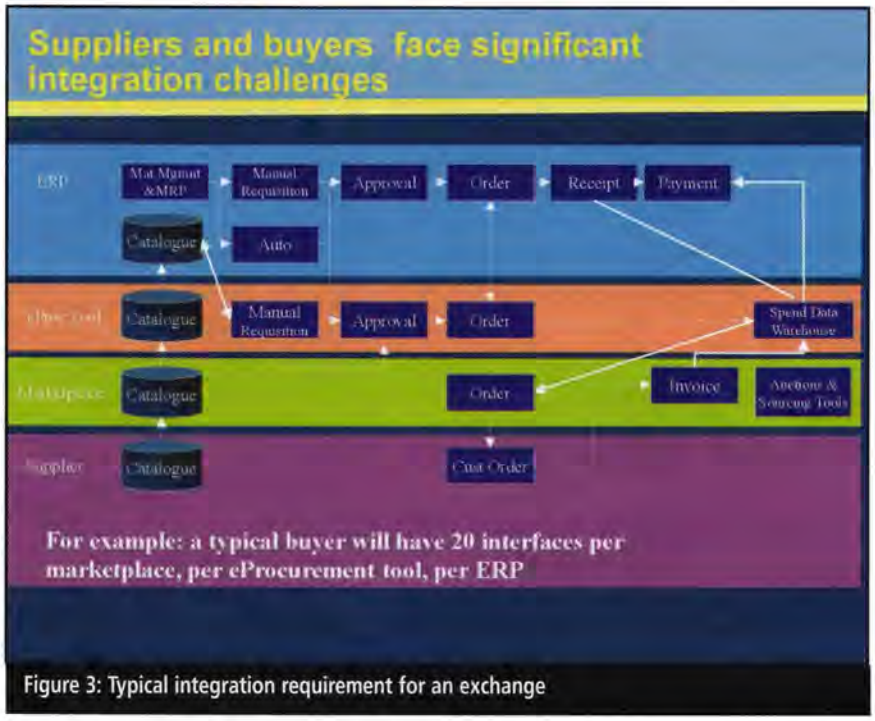

Figure 3: Typical integration requirement for an exchange

between players, consequently the supplier has to be able to talk to each exchange in the format prescribed by the exchange (**Figure 3**). For a supplier, this represents a large cost burden.

- **Fear of commoditisation** – Suppliers need to be convinced that by joining an exchange, their products and unique selling proposition are not in danger of being commoditised. Given the promise of price and market transparency, there is a high chance of this happening. This represents a major concern for the suppliers. Exchanges need to develop a win–win model which ultimately allows suppliers to differentiate their offerings from those of the competition. The use of 'shopfront' as opposed to standard catalogues provides a basis for that differentiation.
- **Access to new buyers** – Despite the promise of buyer and supplier discovery, the reality is that few existing exchange software solutions have the capability to deliver on this. Lack of standardisation in product nomenclature together with immature indexing systems exacerbate this situation, making it more difficult for a new supplier to be discovered.
- **End-to-end supply chain** – Many big suppliers already have EDI systems that link the procurement systems of the buyers with their own sales order systems. Exchanges provide yet another channel. Suppliers will have to cope with the challenge of integrating this new channel with existing systems. Only when a significant majority of the suppliers' clients are on an exchange will they see a reduction in their integration effort.
- **Electronic catalogs** – To participate effectively in exchanges, suppliers will have to create electronic catalogs and maintain them. Managing this is no doubt a challenge for most suppliers. Firstly, suppliers have to cope with making the catalog for a varied audience and secondly, they have to upgrade the catalog content, which has traditionally been made for paper where space is premium, into a digital format that is able to cope with more depth.

Challenges for buyers

- **Lack of integration** – For most big buyers, one of the key drivers for joining an exchange is the reduction in its administrative costs as opposed to price transparency, as they already have their own contracts in place providing bulk discounts. However, the level of sophistication of existing exchange software is such that end-to-end integration of back office systems is not common yet. The result is that many exchange transactions still involve a sizeable amount of manual work to complete the procurement cycle. This creates a barrier to adopt exchanges by buyers.
- **Regulatory concerns** – US Federal Trade Commission (FTC) as well as European Community (EC) concerns about anti-competitive alliances – cartels/companies banding together to influence the market – suggests that the whole area of exchanges continues to be open to regulatory review. The FTC has just recently released a report addressing anti-trust issues. According to the report, industry consortia exchanges will be subject to close scrutiny. Buyers could adopt a wait-and-see attitude in the short term to see how the area shapes up before formally joining in an exchange.
- **Sourcing strategy** – A critical aspect of procurement is sourcing. Buyers need to be convinced that exchanges will be able to match those sourcing capabilities, guaranteeing quality, refund processes and any transaction credits.

Challenges for the exchange operator

Exchange operators will obviously face their own challenges besides some of those mentioned previously.

- **Technology** – By far the greatest challenge is technology, which in its current state is unable to deliver the compelling services which provide most buyers and sellers demand. Until the technology matures, cultivating and sustaining the critical mass of buyers, sellers and transactional volumes required to make an exchange viable will continue to be a challenge.
- **Standards** – Operators also face the additional challenge of standards. With the proliferation of exchanges together with technology providers, the need for standardisation is becoming critical. This will go a long way to reduce the cost to sign up to an exchange for both buyers and suppliers alike. There are attempts at standardisation such as XML, OBI etc. However, no one standard is yet close to industry wide acceptance.

It is clear that while the underlying concept of exchanges sounds simple and the potential value add commendable, the reality is that several concerns exist in buyers and sellers which act against the long-term success of exchanges.

What does the future hold?

Predicting the future in the digital world is unlikely to be an exact science. However, based on current trends, some events are not unlikely in the future.

- **Consolidation**

Following proliferation during recent months, consolidation is inevitable. Many of the existing exchanges will fail or get consumed by the healthier ones. It is widely believed that on average,

most industries will be able to carry a maximum of three exchanges each. The race for survival is on and the early winners are likely to be those exchanges in specialised markets, where there is a naturally high imperative to keep existing deep integration between suppliers and buyers. The next set of winners will be those with very high liquidity. Typically, this will be well-positioned exchanges within industry which take a supply chain view of their offerings rather than just focus on the procurement transaction.

- **Functional enhancement in software**

Software enhancements that allow value added services, inter-operability between exchanges and, most importantly, information flows are inevitable. **eNersection.com** is an example of a company which aims to provide more than just transactional capability to buy and sell equipment in the oil industry. Instead it aims to educate buyers by facilitating the flow of information regarding sellers' technology and experience as well as safety and compliance issues, and other factors required to make an informed purchase. More of such enhancements are expected in the future (**Figure 4**).

- **Common standards**

It is expected that the market place will soon start to see a wave of standards consolidating in various spheres of the exchange space acting as catalyst for the rapid adoption and sustainability of exchanges. For example, XML has wide subscription as the best message exchange mechanism. It is now commonly used for invoices, goods receipts etc. It is, however, not industry standard yet. Variants such as Commerce One's CBL exist too.

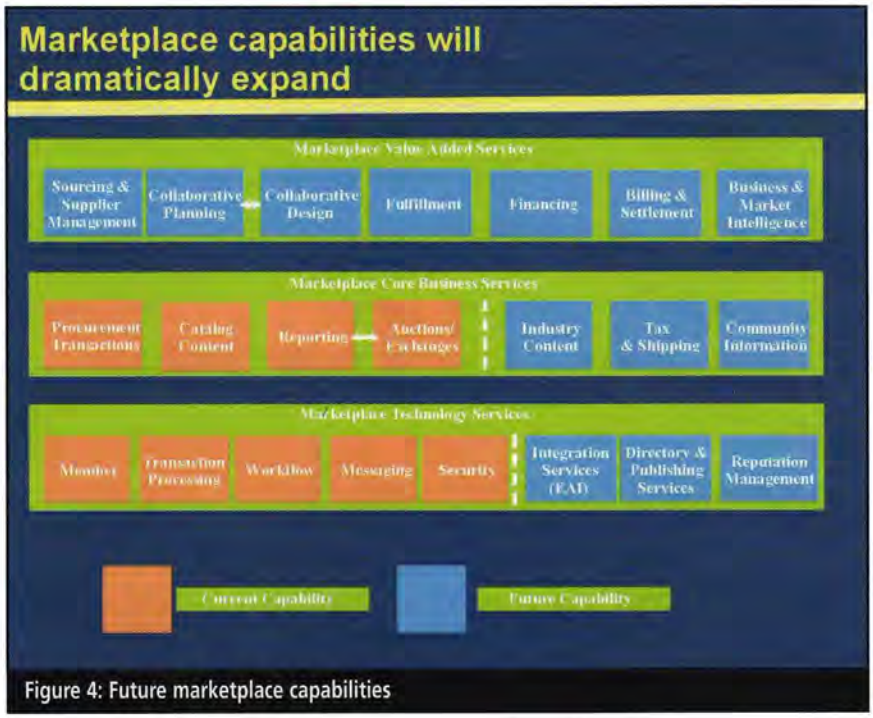

Figure 4: Future marketplace capabilities

As the industry goes through rounds of consolidation, agreement on standards, evolution of the technology etc, one is forced to ask – where will all this lead? Perhaps the financial market gives an idea of what the end will be like – one in which exchange traders will be able to monitor market changes real time as a Charles Schwabbs trader is able to do today, respond real time to price fluctuations, hedge their risks using financial instruments such as futures etc. It will be a future where goods can be bought forward at agreed prices. Such level of market efficiency is bound to redefine the way business will be done.

There is scope for value creation through exchanges for all stakeholders. However, exchanges still have challenges that mean they are not a sure bet. There is no doubt that they will be one of the phenomenon of the 21st Century – the question is more of when will they truly come of age?

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Challenges of the new economy

For nearly a century the IP has encouraged and facilitated technical excellence in an industry that prides itself on attaining the highest possible standards. This year, for the first time, the Institute ackowledged outstanding practices within the international oil and gas industry with seven IP Awards – the winners of which are detailed on p33. Guest of Honour and Speaker at the Awards Lunch was Lord Levene of Portsoken, KBE, Chairman, Investment Banking Europe, Deutsche Bank. The following is a summary of his speech.

'The last three years have seen a revolution in the equity market. The rise of technology, media and telecom stocks – the TMT sector – has split the market in two. These new 'hypergrowths' stocks offer real growth well above the base GDP rates, trade at considerably higher multiples of cash flow and earnings, and have come to dominate access to the capital markets.

Traditional industries have been labeled 'low growth equities' and have seen their valuation multiples collapse relative to the new TMT-dominated market.

To many the oil sector looks like a classic low growth sector. We only have two products – oil and gas. The first, oil, is more than mature. Today, global oil demand is growing at only half the rate of global GDP. Gas grabs headlines as the growth fuel – but even here the forecast multiplier between GDP growth and gas demand sits just below one.

For the companies, specific competitive advantages are even harder to retain. Technology transfer becomes even faster and new competitors emerge across the value chain. Add these to the hard realities of two years of horrendous volatile oil prices and it's hard to envisage premium valuations for oil equities.

To many in the international oil group, the rise of TMT is perhaps just one more challenge in a very complex industry. For the industry environment itself has been changing – indeed, some would say degrading.

- Reserve replacement has become more difficult. The replacement of legacy oil reserves is unproven. Much of the high profile new geography of the 1990s yielded failures, high costs or delays. Volume replacement post-2000 looks increasingly reliant on the capital intensive development of new provinces – the deep water, the Caspian – or complex relationships with state oil companies.
- As oil becomes harder to replace, the industry is switching its focus to gas to drive volume growth. This clearly requires a top quality portfolio near growth markets – China, India, the US, Spain, Brazil. It also opens a whole new set of integration issues. Should the oils repeat a past that saw links from the wellhead through refinery to petrol pump? Do they belong in gas-consuming power stations and pipelines? Do they have the brands and management skills to become customer-orientated multi-utilities?
- Back in the old chain, refining remains a hard business. Circumstances have conspired to produce peak margins this year, but the 1990s' fundamentals look intact. Environmental laws are requiring ever-higher spending in this cyclical, over-supplied activity.
- Then there is politics. Consolidation is getting harder. The anti-trust environment appears to be tightening and may restrict further opportunities for significant cost stripping. More recently, this autumn has found oil again at the center of Opec's search for high oil prices and consuming government's desire for taxes.

So, with TMT gathering the headlines and the capital, growth low, replace-

ment hard, gas demanding new skills and politicians unhappy, how is the oil sector doing?

Industry doing well

Judging the industry by its largest publicly quoted components, we would have to say pretty well. The new ExxonMobil, BPAmocoArco, TotalElfFina and RoyalDutch/Shell have kept pace with the rising valuation parameters across the market. The four have seen a 30–40% multiple re-rating over the last three years. Just rewards perhaps for a change of pace that has exceeded that of the industry itself.

All four have unlocked new sources of cost reduction and higher returns. They have created stronger balance sheets and capital access to manage the commitments of exploiting new provinces: deeper drilling and extraction; new pipelines and infrastructure hubs. BP in particular has restructured its portfolio to match the gas potential of Shell and Exxon in the US and Asia. All four are seeking to commercialise existing gas reserves by testing the need for varying degrees of (often capital and management intensive) downstream integration. Shell is perhaps delving deepest into brand exploitation and end-consumer business. The Big Four are maintaining investor interest through sheer scale, industrial economies of scale and the offer of large share buybacks.

Those under real pressure from the world of the new economy come from the tiers of smaller stocks. In opposition to the upward re-rating of the super majors, many stocks have seen either multiple stagnation or de-ratings of up to 40%.

When looking at this segment of the industry most challenged by the rise of the new economy, let's take theory first, then some practical options.

Two ends of the scale

Our strategists in Deutsche Bank recently produced a paper that justifies the effective stock market de-rating of the mid-cap and smaller oil companies. The argument was relatively simple, although backed up by a raft of formulae and examples. The new economy offers higher growth but also attracts lower equity risk premia – together this equated to higher multiples of cash flow and earnings.

At the other end of the scale, many of the old, traditional lower-growth equities can do little to influence their underlying growth rates (oil is not pharmaceuticals – there are no new demand streams). The cost of capital has also failed to fall as fast. For the sub-GDP oil industry, productivity gains may boost

Charles Henderson, President of the IP (left) and Jeff Pym, Director General of the IP (right) greet Lord Levene (centre) at the Savoy Hotel, London

cash flow, but fundamentally, there is no reason why the multiples placed on those cash flows should expand.

The super majors have beaten this trap through scale, fundamentally higher returns on capital and genuinely global access to new opportunities. A notable repeat business effect.

The conclusion for those outside the super majors? Focus not on the de-rating relative to the market but more on the basics of expanding underlying cash flows: productivity gains, cost reduction, rising returns and company-specific discoveries.

So back to reality, what options could we suggest for the global mid-caps?

Already playing second fiddle to the super majors for investor attention, many in the group find themselves penalised for offering growth rates little better than their much larger siblings. In the battle for the highest mid-cap rating, the fight is on for definition, return and growth.

The first option is clearly to create a 'Fifth Sister'.

Market mergers

Chevron and Texaco recently announced their much-anticipated attempt to merge. The potential for cost reduction should generate higher returns. Together the two should find better access to capital market. They are in a more balanced position in the vital exploration provinces – the Caspian and deepwater West Africa. Under one roof, new options may appear for downstream oil in Asia and the US.

From a stock market perspective, the interest lies in the potential re-rating. Can Chevron and Texaco combined achieve the late 1990's re-rating trick of the super majors? The combined group is operationally much the same size as Total; like the French supergroup it also has a more domestic bias than Exxon, BP or Shell.

To date, the market appears cautious. Total's premium rating is probably sustained as much by size in the French market and its enviable track record of upstream growth, as for its similarities to its larger Anglo-Saxon sisters. ChevronTexaco clearly can not replicate the domestic market advantage. To close the multiple gap it may find it has more to prove in new upstream growth, or a rapid downstream restructuring. The new combination is also seeking its re-rating just as commodity prices are perhaps peaking rather than surging.

Are there any other similar combinations? It's hard to see. In Europe, Repsol and Eni have been left behind – but political will and the lack of cost overlap are obvious barriers. For the rest, company size is just too small to come even close.

The alternative is of course to fall prey to a super major. To find one of the Four Sisters using its multiple advantage to create deals that could enhance value for both the prey and the predator.

More deals in the US have to be difficult given the tightening anti-trust regime. Perhaps moves driven to enhance regional or industrial niches will form the next wave. How closely would BP look at Repsol's gas interests from the Southern Cone to Spain? Will Total see more bulk to recycle capital from non-oil disposals? Could it return to the Elf negotiations with Eni?

Beyond the conventional stock market merger, the changing status and needs of the national oil companies create a new series of options for the mid-caps. If a mid-cap – perhaps less threatening than the all encompassing

The top table: (from left to right) E Stourton, Presenter; T Moore, Honorary Secretary, IP; F Henshall; M Clark, MP, Chairman of Commons Select Committee on Science and Technology; CJ Moorhouse, Past President, IP, Chief Executive, International Trading, BP Oil International Ltd; Lord Levene of Portsoken, KBE, Chairman, Investment Banking Europe, Deutsche Bank AG; CE Henderson, President, IP, Chairman, Total Oil Holdings; D Morrison, Chairman, Wood Mackenzie Consultants; J Pym, Director General, IP; I Miller, President, Energy Industries Group EDS; PJ Newman, Honorary Treasurer, IP and Partner, Arthur Andersen

super majors – could form a close relationship with one of these entities, it could generate both above-average growth and real asset definition.

Super majors are already ahead in China, but in the Middle East, the mid-caps have a chance. Eni now has the second most project awards in Iran after Total. Stocks such as Phillips, Chevron and Texaco are vying for positions in Kuwait. Repsol and Eni are headline names as potential players in Iraq.

Closer to home, there are partnerships with the potential of privatising of Statoil in Norway. Will we finally see some fruit from the oils decade-long struggle with Russia? Across the water, will Brazilian giant Petrobras favour one partner in its search for international expansion?

The conundrums in such deals will be to avoid those that appear industrially very sensible but are in fact dilutive to current investors. We perhaps see examples of this today in the fragmented organisation of central and eastern European refining. How can one material player emerge from a series of stocks with uncharitable stock market rating, difficult shareholding structures and important perceptions of national security?

Similarly, as the gas and power markets in Europe continue to deregulate, will some players be forced onto the back foot – spending capital to defend market shares that investors would rather see dedicated to new opportunities with unregulated returns?

With the investment opportunities available in the new TMT stock market, investors are likely to be ever less charitable to those who pick the wrong asset definition – or to those who fail to add enough new growth to offset the initial dilution of major acquisitions or investments.

So its tough being in mid-cap management – but probably even harder for those who pilot the globe's E&P companies. As a rule these companies have seen the harshest treatment from the TMT-dominated stock and capital markets. While many have met the challenges to improve, most now trade on lower multiples of mid-cycle cash than in the mid-1990s.

Investor interest waned as companies that once occupied the higher niche for higher risk but higher reward capital have been supplanted by truly high growth 'new economy' alternatives. In the capital markets, access to capital has not improved as banks have rushed to fund telecom providers or technology growth. It is staggering that 18 months into a quite incredible oil price rally, the US onshore production profile shows no signs of recovering the ground lost as oil prices halved across 1998. The small oils have no funding base.

The investor message to the world's independents is simple, but difficult, to deliver. The bigger companies are charged with lowering their risk profile and improving returns on invested capital, while offering notable higher rates of growth than their larger, integrated counterparts. The smaller stocks are asked to stay focused on niche plays – and, crucially, their independent-minded managements are told to be more willing to sacrifice themselves to acquirers, or to sell their successes for cash then returned to the shareholder. The companies are asked to generate the investment liquidity so hard to find in these comparatively small companies.

Some in the sub-sector are clearly responding to investor demands by mirroring the merger activities of the super majors. We have a variety of new, large E&P companies in the US. They have cut costs, improved capital access, some have also improved returns on capital, and all have gained the scale to access potentially better opportunities.

One element the companies still appear uncertain about is the return of capital to shareholders. With corporate cash flows at record surplus, perhaps the sub-sector will only be truly rejuvenated in the eyes of shareholders when options for the last dime include dividends as well as more spending.

For the larger independents more isolated in non-US stock markets, the scale-achieving merger is very hard to find. For these companies, the choice may be corporate sacrifice, or the risk of major acquisition. Neither of these options have been a feature of the sub-sector over the last year. Perhaps when oil prices calm and asset valuation becomes a less contentious issue then these opportunities will return.

As for the mid-caps, value-enhancing options clearly exist in matching the industrial activities of the super majors, rejecting the often-disappointing geographic wildcards of the past to play in the major's patch. With many of the oils getting even larger, independents may offer the only real investor gearing to specific trends. Few of the independents are present in deepwater West Africa, the Gulf of Mexico and Brazil. The same applies to the Caspian and the Middle East. Investing in vehicles with these types of exposures – all else being equal – may bring both differentiated growth and the greater chance of a cash exit.

The final word

In conclusion, most oil companies have seen their relative status in the stock market decline as the 'new economy' has driven market multiples to these extraordinary new heights. For some this has genuinely hit the cost of, and access to, new capital. The temptation to blame TNT for all ills is high. Perhaps though, it is more fruitful to view the new economy as just one more challenge in this essentially low growth sector.

Companies should accept the lower relative multiple as a fact. Fight instead for productivity savings, low cost reserves and reasonable margins from higher growth gas markets. The virtuous circle of larger cash flows, rising returns, lower cost capital and improving opportunities looks a more achievable (and fulfilling) target than chasing the sales multiple of a Vodafone, CISCO or Nokia.'

IP Awards 2000 – The Winners

Communication Award sponsored by The CWC Group

Winner: Shell International Ltd: Corporate Identity Programme

Shell's Corporate Identity programme is a multi-layered process of engagement with key opinion former audiences located across the globe, identifying key business, environmental and ethical issues and delivering evidence of Shell's commitment, not only to its core business principles, but also towards a fully sustainable, accountable and inclusive model of business practice.

Information TechnologyAward sponsored by EDS

Winner: Schlumberger GeoQuest: Licence Information for Trading (LIFT)

Harnessing the power of the Internet the UK LIFT Net marketplace enables licence holders to publish licence information for sale, trade or farm-in to a wider audience, at less cost and in a shorter time frame, attracting new buyers, and investors to the UK Continental Shelf. Intuitive map and text query facilities enable potential buyers to view licence information on offer. Schlumberger GeoQuest worked collaboratively with both DTI and UKOOA to fulfil an Oil and Gas Industry Task Force (OGITF, now PILOT) initiative to streamline the acquisition and divestment process.

Environment Award sponsored by Ernst & Young

Winner: Conoco Inc: Deir Ez Zor Integrated Natural Gas Project in Syria (DEZ Gas)

The $430 mn DEZ Gas project supports the continuing modernisation of the Syrian Arab Republic. The project's central mission is to establish facilities to collect and process 175 mn cf/d of natural gas that is currently being flared. This new supply will displace approximately 26,000 b/d of heavy fuel oil used to generate electric power in Syria. It is estimated that the project will reduce CO_2 emissions by over 5.4 mn t/y.

Community Initiative Award sponsored by LASMO

Winner: Unocal Corporation: Bangladesh Community Relations Programme

Upon taking ownership of three E&P blocks in 1999, Unocal Bangladesh, an affiliate of Unocal Corporation, immediately set out to determine how to meet community needs in a country with unlimited challenges. Within one year, the company launched 'Community Outreach 2000,' and has assisted thousands of Bangladeshis through its education, health care, humanitarian assistance and community development efforts. These programmes contributed to Unocal being named Outstanding 1999 American Company by Dhaka's American Chamber of Commerce.

Honourable mention: LASMO Oil Pakistan Ltd: Dureji Healthcare Centre

LASMO Oil Pakistan Limited (LOPL) started a Healthcare Centre in March 1999 at Dureji, a remote village of the Balochistan province in Pakistan with a high rate of diseases like gastro-enteritis, hypertension, TB, anaemia, diabetes, asthma and malaria. The Dureji healthcare doctors are able to offer medical services 24 hours a day, backed up by free medicine provided by LOPL. Common diseases have either been eliminated or reduced considerably by observing primary healthcare techniques. Local volunteers are given practical training at the Dureji Centre and the Agha Khan Hospital in Karachi, to ensure that the Centre will, one day, be self-sustaining.

IP Awards 2000 presentation

Safety Award sponsored by Texaco

Winner: Schlumberger: Driving Safety

Analysis of 'Loss' identified driving safety as a key priority for Schlumberger. A comprehensive safety programme was introduced, which included annual driver training for all employees and contractors, driving performance monitors fitted to vehicles, mandatory wearing of seatbelts in all vehicles and journey management (includes minimising exposure to driving, planning of routes and breaks). Automobile Accident Rates (AAR) have fallen significantly since the introduction of the programme.

International Platinum Award sponsored by Deutsche Bank

Deutsche Bank

Winner: BP Amoco plc: Emissions Trading System

BP has set itself a greenhouse gas emissions reduction target of 10% from its 1990 baseline over the period to 2010. In January 2000, BP launched a world-first group wide emissions trading system as a tool to assist delivery of this target as cost-effectively as possible. The company is already finding that this approach focuses creative energy in ways that help identify unexpected economic opportunities.

Innovation Award sponsored by IndigoPool.com

IndigoPool.com

Winner: Shell UK Ltd: Skiff Project – Trident Platform

The introduction of marine access, a UK first, has cut weight and facilities from the traditional platform design. The result, the 'Trident' platform, developed by Shell Expro, slashes development and operating costs for smaller fields in its mature Southern North Sea gas business. Installed by drilling rig, the design also utilises the well conductors as foundation elements.

Honourable mention: Minton Treharne & Davies Ltd: CypherMark

The CypherMark tagging system makes innovative use of nature's biological fingerprint to allow the unique marking and subsequent identification of, for example, tanker cargoes, crude oil and petroleum products. This will reduce the incidence of pollution, theft and fraud in the industry by identifying those responsible. With millions of unique codes available CypherMark is cost effective, flexible and secure. It facilitates demonstration of innocence as well as proof of guilt.

The specially designed IP Awards are engraved stainless steel in a shape that echoes the drill core so familiar to the industry. The actual presentation involved a nominee from each of the winning teams coming up to the podium to accept their award from a representative of the company sponsoring the award. For the first IP Awards 2000 ceremony, the people involved were:

Communication Award – sponsored by The CWC Group
Presented by: Elizabeth McLaughlin, Director Business Development
Accepted by: Tom Henderson – CI Communications

Information Technology Award – sponsored by EDS
Presented by: Ian Miller, President, Energy Industries Group
Accepted by: Cal Rogers – Manager North Europe, IndigoPool.com

Environment Award – sponsored by Ernst and Young
Presented by: Paul Wenman, Director of Environment and Sustainability Group
Accepted by: David Lundeen, Managing Director, Conoco

Community Initiative Award – sponsored by Lasmo
Presented by: Paul Hemmens, Group General Manager
Accepted by: Jeff Pym, IP Director General, on behalf of Unocal

Safety Award – sponsored by Texaco
Presented by: Willie Stanfield, Vice President Safety
Accepted by: Graeme Lawrie, Driving Safety, Schlumberger

International Platinum Award – sponsored by Deutsche Bank
Presented by: Rob Gray, Global Head of Energy and Utilities
Accepted by: Charlotte Wyles (middle) and Rachel Lewis (right) for BP Amoco

Innovation Award – sponsored by IndigoPool.com
Presented by: Satish Pai, General Manager
Accepted by: John Sharples – Surface Engineering Team Leader, Gas Supply Group of Shell UK Exploration and Production

Photo courtesy of AP Photo Library

Rising demand fuels market optimism

Tanker owners have enjoyed unprecedented levels of income during 2000 – but they know it was events taking place a year ago that set the tone for the market.

The tanker business seldom makes much money for those involved in owning ships. They can obtain some security of income from the timecharter market, where charterers secure their own baseload requirements at the sort of rates that allow owners to look after their ships long enough to pay off their capital costs. Owners can also take advantage of preferential tax treatments in the more understanding countries. This apart, though, the spot market almost never provides tanker owners with the sort of return that justifies taking money out of the bank in the first place.

Profitability hits the spot market occasionally and, almost by definition, unexpectedly, normally coinciding with a dramatic disruption to the normal pattern of oil trades. The Gulf War of 1990/91 was the last time this happened, as charterers took every available tanker to get as much oil out of the threatened area as quickly as possible. The early 1970s were another boom time for tanker owners but, since then, there has never – until now

– been a situation where the fundamentals of the oil tanker business have been so drastically tilted in favour of owners.

Rising spot market rates for tankers of all sizes during 2000 were underpinned by two separate factors: rising actual demand and uncertainty over the ability of the existing fleet to meet future regulatory requirements. It was the latter factor that kicked in first, prompted by the reaction of the French authorities to the sinking of the tanker *Erika* off the coast of Brittany in December 1999 (see photo, p35).

Shipping safety

Pictures of oiled beaches and dying seabirds made it imperative, politically, for the French Government to be seen to be tough on what the public regards almost universally as a dirty business. Despite entreaties from the oil and tanker industries and other governments, not to mention the International Maritime Organisation (IMO), France demanded draconian action to outlaw tankers from its waters according to various criteria. Ultimately this concentrated on the more rapid phase-out of single-hull tankers – despite the fact that this argument was irrelevant to the catastrophic hull failure that *Erika* suffered.

The French public – and, in all likelihood, most of the government – was probably oblivious to the fact that IMO's International Convention for the Prevention of Pollution from Ships (MARPOL) already contains provisions for single-hull tankers to be retired from service according to a rolling schedule over the coming years. In the end, France was prevailed upon by the European Commission and others to put its case to IMO rather than indulge in unilateral action which would have created immense difficulties for oil and tanker interests.

Nevertheless, various proposals were put forward to the IMO's Marine Environment Protection Committee (MEPC) at its autumn meeting this year. Although a final decision will not be made before the Committee's next session in April 2001, it looks likely that a Danish-led compromise proposal, backed by the UK and the Netherlands, will win the day and bring forward phase-out dates. The schedule, which also applies to smaller tankers not so far within the scope of the MARPOL single-hull regulations, will bring international requirements more closely into line with those introduced by the US in the wake of the *Exxon Valdez* oil spill in Alaska. There is still opposition from some quarters, notably Japan, whose massive oil import requirement relies to a large degree on comparatively modern single-hull tankers.

Furthermore, this story may not yet be over. Interests within the tanker industry are increasingly reliant on port state control (PSC) to police the regulations that are already in place. There has been criticism that *Erika*'s structural faults were missed by PSC inspectors and such shortcomings have been thrown into even starker relief by the loss of the chemical tanker *Ievoli Sun* in October this year – once again threatening the coast of Brittany, this time with 4,000 tonnes of styrene. *Ievoli Sun* had been detained by PSC inspectors shortly before the loss of the ship in heavy weather off Alderney. PSC regimes are likely to be given greater powers to detain ships but their work will only really be helped by the provision of more funds to pay for more inspectors.

Market disruption

While the impact of the regulatory changes following the loss of the *Erika* will not be felt to any great degree for some years to come, the uncertainty about France's possible actions was sufficiently great to cause disruption to the tanker markets during the first half of 2000. Several questions were raised. If some single-hull tankers were to be immediately retired, how would Europe's oil import requirements be met? Would there be compensation for owners? Where would the money come from to build a new, double-hull fleet? Where would the shipyard capacity needed to build these ships be found? Where would the retired ships be scrapped and what would this sudden influx of steel scrap do to ship-breaking prices? From the owners' point of view, a collapse of their financial viability was threatened.

One immediate outcome was that charterers, particularly those whose cargoes would pass through French waters – in other words, much of Europe's oil traffic – shunned older or single-hull ships, fearing the adverse publicity that a future incident would bring. Spot charter rates for double-hull ships, in particular newer vessels, strengthened significantly throughout the first half of the year. The impact was felt right across the tanker fleet – average spot rates for 30,000 dwt product tankers, for instance, increased from W180 in December 1999 to W250 by the middle of 2000; those for Suezmax crude oil tankers (approx.130,000 dwt) rose from W95 to W150 over the same period; and very large crude carriers (VLCCs, approx. 250,000 dwt) improved from W43 at the end of 1999 to W92 by the middle of this year.

What was especially notable of this time was the massive improvement in period rates that charterers were prepared to pay for good tonnage, especially in the larger vessel sizes. According to *Lloyd's Shipping Economist*, period rates for Suezmax tankers nearly trebled over the six months to June 2000, rising from $570,000/month up to $1.6mn/month. Rates for VLCCs rocketed from $700,000/month to $3.95mn/month.

The impact of regulatory uncertainty eased substantially in the second half of this year. Panic over, owners could accustom themselves to the likely 'drop dead dates' for their single-hull ships while enjoying the improved level of income forthcoming from both the spot and timecharter markets.

Rising demand

This disruption had, though, masked to some degree an underlying improvement in the level of demand for tanker capacity. Crude oil prices had been on an upward trend for some time, reflecting a gradual tightening in the oil market led by rising demand. The recovery in the Asian economies was prompting energy use and the ongoing strong economic performance in the US, in parallel with that country's inability to expand domestic oil production, was also placing a greater demand on world oil availabilities. This translated into a firming in tanker demand in the first half-year and, although there was a lull in June and July, by the middle of the third quarter the supply/demand position was becoming seriously tight.

Eventually – and largely in response to consumer complaints about high fuel prices – the major consumer nations petitioned Opec to put more oil on the market in order to ease the level of prices. While there was some disagreement among the Opec nations as to how best to apportion this increase in output – or even whether it was necessary, given that consumer price levels reflect taxes more than oil prices – additional oil did arrive on the market, serving to place further demands on the tanker fleet.

This significant increase in tanker demand has come at a time when the size of the active fleet has been in decline. Poor earnings through most of the 1990s had discouraged owners from ordering new ships and analysts had stressed the need to increase the volume of scrapping in order to bring vessel supply closer into line with

demand. Tanker supply fell from 291mn dwt in 1997 to 282mn dwt last year, and by the middle of 2000 had declined to below 275mn dwt. Most of this shrinkage was concentrated on the VLCC fleet – the very sector that this year has been in demand to carry long-haul shipments from the Middle East to oil-hungry consumers in the US and the Far East.

Such a growing mismatch between tanker supply and demand has not been seen on any consistent basis since the closure of the Suez Canal. That crisis led directly to the construction of ever-larger tankers to improve the economics of shipping oil the long way around Africa to North America and Europe and this year there has once again been talk of constructing ultra large crude carriers (ULCCs) of up to 500,000 dwt – or even bigger.

This speculation has not yet, however, been translated into concrete action. Indeed, although a number of new ship orders have been forthcoming in the second half of the year, there has hardly been a rush to place new contracts. Owners seem content at present to take advantage of further rises in freight rates and wait to see whether the new supply/demand situation settles down.

At the moment, though, owners are enjoying unprecedented levels of income. Spot rates, already on a high following the first half-year's uncertainty, have risen across the board by some 50% in the six months to October 2000. Worldscale rates for VLCCs, which pottered around in the W40s and W50s for much of the previous decade, are now averaging more than W140 – and up to W180 on some routes.

Historically, booms in the tanker market have never been prolonged; long-term spot rate trends demonstrate a pattern of lengthy lulls punctuated by spikes of intense activity marked by very short-lived peaks of extremely high rates. Period rates track this trend but with less extreme peaks. On the basis of history, then, owners cannot dare expect current levels of earnings to be maintained.

On the other hand, it is tempting to speculate that things may be different this time around. The supply/demand fundamentals are such that it could be a couple of years before sufficient additional tonnage can be made available to meet the increased level of oil demand which, short of a dramatic economic collapse in the main consuming nations, looks likely to persist. The muted response to higher earnings in terms of newbuilding contracts thus far also suggests that owners are learning the lessons of previous boom-bust cycles. Indeed, the persistent poor level of earnings through the 1990s left many owners in such a poor financial position that they have proved susceptible to takeovers by those willing to gamble on an upturn in the market. The result is that the independent tanker fleet is now concentrated in fewer hands than during earlier upturns, suggesting that perhaps this time owners will have a greater ability to manage the market in their favour.

Shipping costs still represent a very small part of the landed cost of oil in consuming nations and, as the oil price rises, this proportion is further diminished. During the current environment of high crude prices, when the integrated oil companies are making record profits, charterers are not likely be too concerned with the cost of freight.

Tanker owners might, therefore, just this once be justified in feeling optimistic about the prospects for the market.

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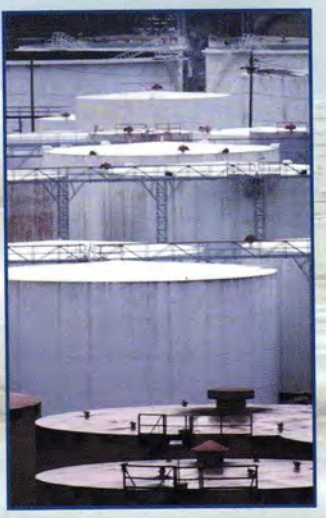

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Oil cargo insurance – the need for change

The international marine insurance community is reporting a significant deterioration in cargo and hull underwriting results for the period 1998 to 2000. Much of this has been due to the level of underwriting capacity driving rating down to an unprofitable level. In addition, rating differentials between different types of risk and voyage have almost disappeared. *Ian McAllister*, Senior Marine Manager, Gerling at Lloyd's, reports.

An increased loss incidence to both oil cargo shipments and tanker tonnage is partly to blame for the recent deterioration in cargo and hull underwriting results. There is a strong link between these claims and the average age of the world tanker fleet – now over 18 years. Since 1992, four of the five vessels that suffered catastrophic hull failures were more than 24 years old. The average age for scrapping tankers is now 26.2 years. With healthy oil tanker chartering rates, and a decline in tanker replacement programmes – especially for VLCCs (very large crude carriers) – insurers will continue to suffer unless they radically alter the way they underwrite, and manage more professionally their risk selection.

In addition, there is a strong correlation between the extent of losses and the sizes of vessels chartered, as well as with the fleet profiles of vessels operating in different geographic areas. Also, certain types of oil have a pattern of greater losses than others, and this needs to be taken into account by underwriters.

Insurers welcome oil charterers who impose strict age limitations on the vessels they hire, recognising the problems with older tankers. However, there is much debate over how they should be rewarded for striving to minimise losses. Is it the case that oil charterers are duty bound to take these measures to minimise losses, or are they acting in the interests of the environment as well?

Cargo insurers should give every encouragement to those who have vessels vetted as part of their overall chartering philosophy. While it remains essential for vessels to maintain a full class certificate with a recognised IACS (International Association of Classification Societies) classification society (see **www.iacs.org.uk**), this should be complemented by approval of each vessel with OCIMF (Oil Companies International Marine Forum) and the SIRE (Ships Inspection and REporting) programme (see **www.ocimf.com**), or an equivalent vetting agency. Rating allowances should be due to those who can demonstrate that vessels chartered are well managed. The emergence of Equasis – a provider of details on the quality of shipping – is a welcome addition in presenting charterers with information on acceptable vessels (see **equasis.org**).

Balancing books

At a time when the international shipping community is doing much to reduce losses, it appears inevitable that these measures will be met by some cargo insurance underwriters charging higher rates. This is a reaction to higher reinsurance charges and, overall, an attempt by underwriters to balance their books, against a background of sizeable losses from many areas.

As fund managers, insurers are responsible for maintaining adequate margins across insurance cycles. Oil cargo insurers should clarify the reasons why they will have to pay higher premiums, especially if they can demonstrate that they:

- run an approved ship chartering and vetting programme,
- have had a low loss incidence over the last five years,
- maintain a satisfactory risk management programme,
- charter in young, modern tonnage, and
- remain in control of shipping, loading and unloading arrangements.

Where insurance broking intermediaries or consultants are involved, there should be a review of the level of brokerage and profit commission they are earning, given that insurers will be operating on net incomes and making their comparisons against gross incurred claims.

Oil company risk management teams should not only be looking closely at the credit rating of their insurers, but also their ability to underwrite successfully across the insurance cycle. There should be a high level of customer support and communication, and a speed of service that is second to none.

Weakening standards

During the 1990s, cargo insurers have witnessed a weakening of underwriting standards. Many no longer make allowance for:

- providing a rating differential for the length of voyage,
- loadings or discounts for specific countries of origin or destination,
- high quality, well managed and vetted tanker tonnage,
- the quality of the assured, or the size and scale of their operations, or
- loss mitigation.

Insurers need to harness the many sources of information available, and use these to adjust rating levels. In particular, many of the articles that appear here in *Petroleum Review* can give a refreshing insight into issues which underwriters need to pay closer attention to. These include the following articles by Paul S Harrison, a consultant to the IP's PM-L-4A Marine Oil Transportation Database Panel:

- Vessel type can impact crude oil transportation losses, *Petroleum Review*, October 2000;
- Crude oil marine measurement annual reviews, most recently *Petroleum Review*, September 2000.

Sharing information

There continues to be a pressing need for the commercial marine insurance markets to have stronger trading links and discussion groups with the International Group Mutual P&I clubs, especially in the sharing of information for trend analysis of oil cargo shipments and tanker tonnage. By accepting that there is a common goal, both markets could benefit immensely in reducing claims and averting major pollution disasters.

In striving to provide solutions to these insurance problems, Gerling at Lloyd's Limited has recently launched Oilsure (see **www.oilsure.com**) – an online trading system for the arrangement and purchase of oil cargo insurance. This system gives credit to assureds who minimise risk. Many of the underwriting factors mentioned in this article have been incorporated in order to produce a highly sophisticated automatic rating engine sitting at the heart of the website. One of the great benefits is that these systems can enhance the clarity of otherwise complex processes. They can be key communication tools. Now is a time for change.

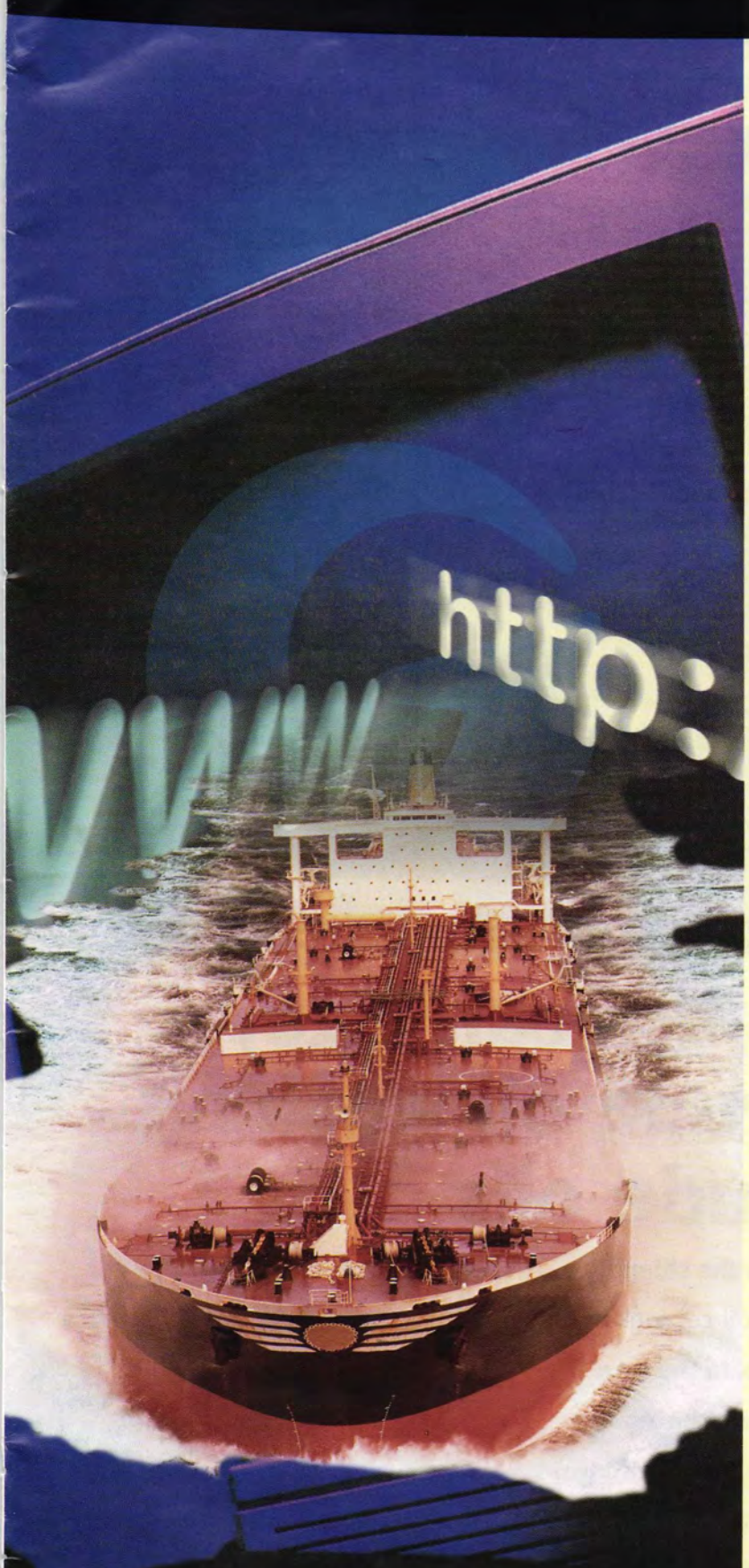
Fire on Service Station Forecourt

A fire occurred last year on a service station forecourt during a delivery by a petrol tanker.

Investigation by the West Yorkshire Fire and Civil Defence Authority has established that the driver ignored industry agreed procedures by removing all the caps from the underground storage tanks before commencing delivery. The service station was equipped for vapour recovery but the filler drop pipe on one of the tanks was too short, not terminating below the liquid level at all times. The petrol vapours, instead of being returned to the delivery vehicle, took the least line of resistance and escaped from the underground tank being filled via the vapour connection to the adjacent tank with the faulty drop pipe and then to atmosphere, as the cap on the delivery pipe to this tank had been removed. A source of ignition was present which caused the vapour to ignite, and only the quick action by the delivery driver stopped what could have been a serious incident.

It is important to note that all drivers delivering to service stations must follow procedures and, especially at service stations equipped with vapour recovery, only remove the end caps on fill lines as and when the lines are needed to fill individual tanks. At all other times, when tanks are not being filled, the end caps must be kept in position.

Site operators should check that the drop pipes on the fill lines to all tanks are long enough to ensure that a liquid seal is maintained on each of these lines at all times.



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Guidelines for the carriage, heating and crude oil washing of different crude oils

In the 1970s the environmental emphasis in the shipping sector was clean seas and the reduction of oil content in tank washings that were discharged into the sea. In the new century, the design of ships has changed, so reducing the need for excessive crude oil washing and a new environmental issue has arisen – the need to reduce air pollution. It is hoped that with the correct balance of cargo equipment and its use, cargo heating and crude oil washing (COW), crude oil can be transported safely and efficiently to its destination where it can be discharged with minimum of loss. *Bruce Nicholls reports.**

Readers of *Petroleum Review* may have seen the annual crude oil measurement data published by the IP's Marine Oil Transportation Database Panel, PM-L-4A (see *Petroleum Review*, September 2000). This panel sits as part of a joint PM-L-4A/B meeting held over a three-day period, twice a year, and is a sub-group of the IP Petroleum Measurement Committee. Two of the three days are used for the meeting of the Oil Transportation Measurement Panel, PM-L-4B, which addresses issues related to oil measurement on tankers and oil loss control in general.

Over a series of meetings between 1994 and 1997 the panel discussed a number of 'problem' crude oils that need special handling. Care is required in order to prevent excess clingage in vessels' tanks, while at the same time

IP Crude Oil Data Submission Form

Name: _____

Organisation: _____

Address: _____

_____

_____

Indicate Test Standards Used		
Standard		**Edition**
IP		
ASTM		
Other (specify)		

Date:

Crude Oil:

Test	Data Test				Test Method Used
API Gravity					
RVP (psi)					
Gas to C_4 (%wt)					
Total Wax (%wt)					
Pour Point (°C)					
Kinematic Viscosity	**T_1 (°C)**		**V_1 (cSt)**		
	T_2 (°C)		**V_2 (cSt)**		
Loaded temp. (°C)					
Carriage Temp. (°C)					
Discharge Temp. (°C)					

Comments and experience of handling this crude oil

Figure 1: IP Crude oil data submission form

preventing excessive losses due to tank venting which can occur if crude oils are carried at too high a temperature or if too much crude oil washing (COW) is used.

The only information available which considered vessel discharges were the MARPOL regulations concerning COW. However, these regulations were written in the 1970s and used the generic term 'crude oil.' No consideration was given to the different qualities of specific crude oil grades as the number of different crude oils being transported by sea was limited at this time. However, as technology has progressed over the years, the development of new areas and smaller fields has considerably increased the quantity of different crude oil grades being transported by sea.

Searching through some old information from the IMO (International Maritime Organisation) regarding the specifications for design, operation and control of COW systems, the following passage was found;

'...[IMO] recognises that further improvement may be required in the specifications, taking into account the development of technology in this field and in the light of experience gained.'

As no experiences concerning the handling of crude oil had been recorded, the PM-L-4B panel members decided to share their experience and to prepare a document giving guidance with respect to the carriage, heating and crude oil washing of different crude oils. This was completed with the publication of *IP Petroleum Measurement Paper No.8* in 1999. The contents of this paper are discussed in the following paragraphs.

The Annex

From the data that had already been considered by the panel, it was evident that crude oil handling procedure could be defined according to the crude oil quality. The panel members agreed to pool that assay data which was considered useful for indicating the carriage and discharge behaviour of crude oil. Information on 438 different crude oil grades was collated from some 18 oil companies represented on the panel and is presented as Annex 1 of the document.

Although some readers may find the mass of data contained in Annex 1 useful, on its own it is not sufficient to allow decisions to be made on crude oil carriage and handling as limits need to be set on some of the parameters, taking into account recommendations given in the rest of the document.

Chapters 4, 5 and 6

Chapter 4 of the document provides some general information on the different groups of crude oil, roughly split into high viscosity, waxy paraffinic and volatile crude oils. There are comments on the different ship types used to carry crude oil cargoes, with points that need to be considered regarding heating, pre-chartering, crude oil washing and recommended actions for the ship's master to consider.

Chapter 5 comprises notes on the key assay parameters and discusses the limits of each parameter and their potential effect. Four of the main quality parameters that can be used to determine crude oil handling are:

- 'gas to C_4' content (methane to butane);
- total wax;
- cloud point; and
- viscosity.

Crude oils should be handled with care at all times. One of the issues arising more frequently with crude oil carriage that has particular environmental and safety implications is the concentration of hydrogen sulfide (H_2S) and benzene in the vapour space above the crude oil. Some guidance is given and some H_2S values in liquid phase have been obtained.

Finally, Chapter 5 discusses the importance of the remarks column in Annex 1 and the meaning and implications of some of the comments. Chapter 6 considers safety as a separate issue and gives references to the *International Safety Guide for Tankers and Terminals (ISGOTT)*, Chapter 16, Toxicity of Petroleum, and associated substances. Three substances in particular are discussed: H_2S, mercaptans and benzene.

Chapter 7

Chapter 7 of the document lists calculation procedures and examples for calculating viscosity at a temperature not specified in Annex 1. This information can be used to determine the pumpability of the cargo. Furthermore, there are two methods of calculating cloud point for crude oil, neither of which has been proven to be more reliable than the other. Method 1 and an additional simplified method have been developed by Dr T J Gunner, while Method 2 is based on a conventional cloud point blending calculation with additional assumptions.

The cloud point values in the Annex are based on both methods, thereby obtaining a minimum and maximum value. Cloud point gives an idea of the minimum temperature at which wax will start to precipitate from solution and so start to accumulate as sludge. Experience has shown that for short voyages it is permissible for the crude oil temperature to fall below the cloud point without undue problems arising. In conjunction with total wax content, the cloud point can be used to determine a suitable carriage temperature.

COW codes

Based on the crude oil quality and information contained in the chapters detailed above, each crude oil has been given a washing code which is also dependent on ship type and season through which the cargo is being transported. In winter conditions, a more stringent washing regime may be required than for the same crude oil transported in summer conditions. Eight washing codes have been developed which include the suggestion of no COW. For some crude oils having high gas contents there is the potential for tank overpressurisation during COW operations.

It should be remembered that these codes are part of a guideline only and that current MARPOL regulations must be adhered to at all times.

Appendices B and C

Appendix B contains four climatic charts for average air temperature and sea temperature in February and August. These charts have been included as ambient conditions can affect the behaviour of some crude oils. Crude oils with moderate wax contents may not cool down sufficiently in the summer to allow for wax precipitation to take place. However, in the winter or when passing through colder climates, the ambient conditions may encourage wax precipitation and hence give rise to increased clingage and the need for increased COW and/or heating.

Appendix C lists a small number of crude oils where panel members have indicated particular handling problems. Some specific solutions are given.

Appendix A

The panel want this document to remain 'live' and plan to update it at regular intervals. The new information to keep the document live must come from the industry – not just the oil companies, but also the personnel on the ships and in the terminals. In Appendix A is a data submission form which can be used to send new information to the panel. An example of the form is shown in **Figure 1**. Readers of this article are encouraged to photocopy and fill the form in, returning it to the IP, marked for the attention of John Phipps.

The form is intended to be completed for any new crude oil or where the handling differs from that suggested in the document. The assay data required should be made available from the crude oil supplier; updates on the handling temperatures and other experiences should be supplied by ship's officers, terminal or oil company representatives involved in monitoring crude oil discharges.

Conclusion

The panel members have attempted to collect together their total experiences of transporting some 400-plus crude oils, condensates and residues. It is hoped that the reader of the document finds it both informative and an aid to correct crude oil handling.

**Bruce Nicholls is Chairman of the IP's PM-L-4A/B Oil Transportation Measurement Panel, and is a Marine and Refinery Loss Advisor at BP Amoco.*

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Alaskan gas to be the next mega-project

Alaskan reserves at Prudhoe Bay and nearby Pt Thomson are 'the largest untapped gas resource in BP's portfolio', according to the company. At around 10tn cf they are less than half what they would have been if BP had not sold Arco's share to Phillips Petroleum to gain US FTC (Federal Trade Commission) approval for its purchase of Arco. The reserves it does hold, however, still account for about one-third of its worldwide proven reserves, writes *Fred Thackeray*.

As shown in **Table 1**, total proved reserves on Alaska's North Slope amount to over 34tn cf – equivalent to one-fifth of US total proved reserves of 164tn cf at end-1999. Of Alaska's 34tn cf, some 26tn cf are proved developed reserves at Prudhoe Bay while a further 8tn cf are proved undeveloped reserves at nearby Pt Thomson. The principal holders in Prudhoe Bay are BP, ExxonMobil and Phillips. The principal holders at Pt Thomson are the same, with the addition of Chevron. The Alaskan State's royalty interests are 12.5% at Prudhoe Bay and about 14.6% at Pt Thomson.

To all the companies holding these reserves it is particularly significant that they are equity reserves. The returns from their exploitation will thus be subject to royalties and to non-confiscatory taxation. Furthermore, the Alaskan Government is considering the possibility of tax concessions in the initial years of gas development projects in order to overcome the high costs due to their remote location and the hostile natural environment

Even greater gas resources could be in prospect in Alaska, according to estimates by the US DOE (Department of Energy). It estimates 'the most likely undiscovered and recoverable resource at 64tn cf.'

Canada–US pipeline

BP has been designated operator at Prudhoe Bay and 'expects to move forward in the short term' with its preferred proposal to build a long-distance, big-inch diameter pipeline to supply gas via established networks in Canada to US markets. Some published estimates have put the cost of such a pipeline at up to $10bn.

The concept of a pipeline to US markets has been mooted many times in the past 25 years, but has always been judged too expensive. Today, however, the scene has changed. The distance to reach Canadian pipelines has diminished as the Canadian network has crept further northwards – due to technological advances the unit costs of pipeline construction promise to be 25% less than hitherto possible. Furthermore, gas prices in the US are expected to continue well into the future at much higher levels – perhaps not today's remarkable $4.50/mn btu, but at least $3. Compared with these figures, BP believes it will be possible to deliver Alaskan gas in Chicago at a tariff of $2/1,000 cu ft.

Hat-trick of proposals

Three possible pipeline routes are under study – a northern route to the Mackenzie Delta in Canada and then southwards; a central route south of ANWR (Alaska National Wildlife Reserve) to the Mackenzie Delta; and the long-proposed southern route, commonly referred to as the ANGTS line. BP's preference to market Prudhoe Bay gas by a pipeline to Canadian and US markets is supported also by ExxonMobil.

Phillips Petroleum has so far clung to an option that Arco was pursuing previously. This would be to pipe the gas by an 800-mile line to Valdez to supply an LNG export plant. For the short-term, however, the LNG option is being dismissed by BP, on the grounds of oversupply in Far East gas markets due to deregulation in Japan and slower growth of demand.

The third alternative to monetise Alaska's gas is the new technology of Fischer-Tropsch gas-to-liquids (F-T GTL).

BP is keen to emphasise that there is sufficient gas to develop more than one pipeline alternative and, with its partners in Alaska, it is pursuing the possibilities of developing cost-saving synergies between alternatives.

The GTL alternative is, in fact, the company's second option – as it is for ExxonMobil who has spoken publicly in Alaska of the potential for building a 100,000 b/d GTL plant using its proprietary AGC-21 F-T technology. Exxon has also been considering the construction of a plant of the same size – which would be the largest yet built anywhere in the world – located in Qatar.

Pilot plant

BP is pursuing a separate GTL proposal. This is to start immediately by building

	Alaska (approx.) Mid-2000	Total US (Dec 1999)	Total world (Dec 1999)
BP	10	12.0	33.8
ExxonMobil	12	13.0	56.8
Phillips Petroleum	12	3.4	6.4
Total three companies	34	28.4	97.0

Sources: Presentation by Dr Tom Quigley, BP Technology Vice President Gas & Power, at SMi Conference on GTL in London; 20F & 10K reports of each company.

Table 1: Proven Alaskan natural gas reserves in context, developed plus undeveloped (in tn cf)

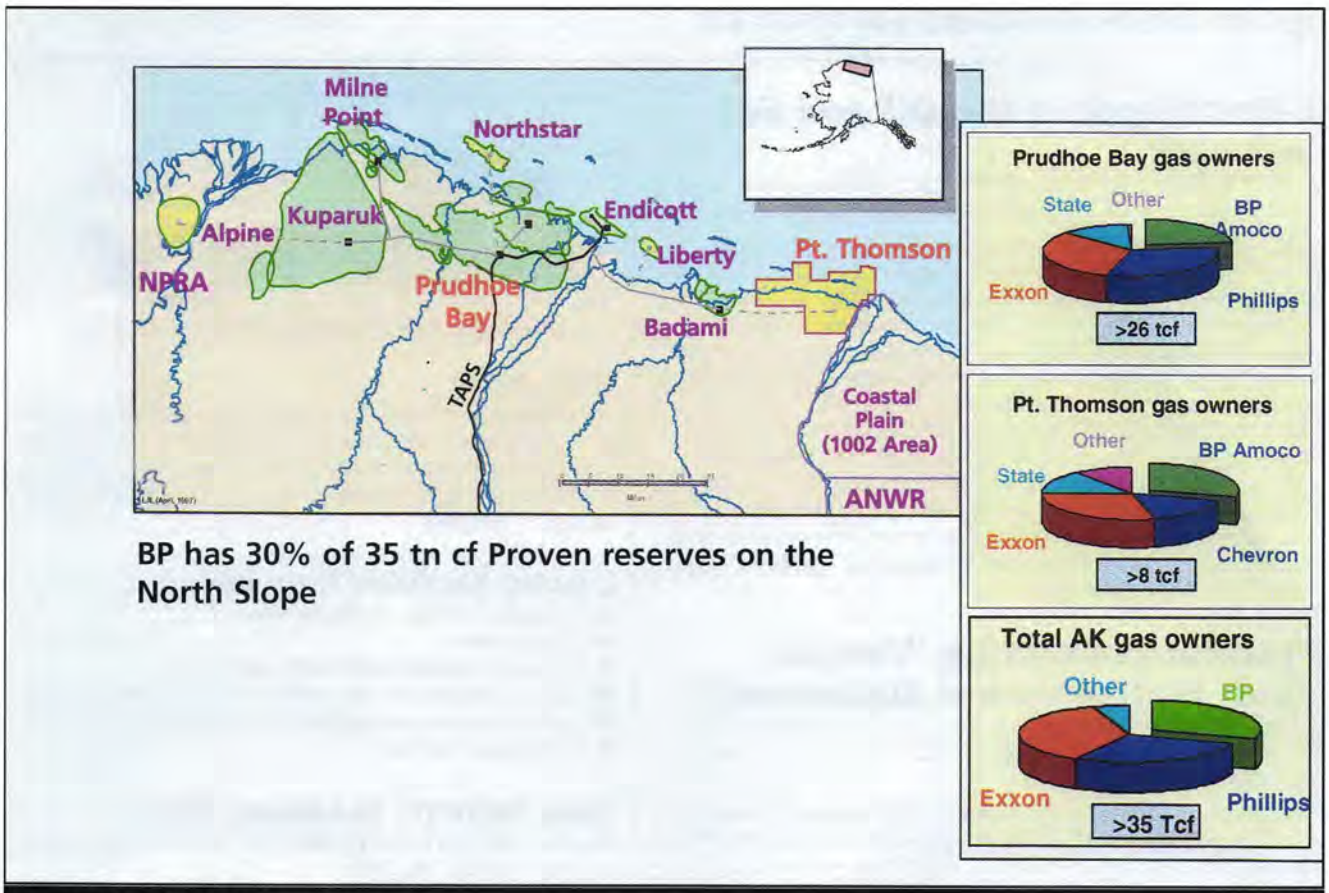

Figure 1: Alaska North Slope gas resources

at a cost of $86mn a small pilot plant with a capacity of 300 b/d at Nikiski near Anchorage. This will be a test-bed both for its own proprietary technology and catalysts, and for testing alternative technologies.

Ground clearance for BP's pilot plant is already underway, with the intention to go onstream in 2Q2002. The company says that within two to three years its own technology will have been tested and it foresees that the first commercial plant could be in operation by 2007. Plant sizes under consideration range between 30,000 b/d and 85,000 b/d.

BP's GTL technology, developed during several years' research jointly with Kvaerner, may provide a major breakthrough. BP is hopeful that its innovative reformer design for the production of syngas will result in a reduction of unit costs in this first phase of F-T units by between 20% and 40%. Since the production of syngas in most proposed designs accounts for 60% of the total capital costs of an F-T plant, such a reduction of syngas costs would have a major impact on economic viability.

The key feature of the proposed syngas reformer is a patented technique that rapidly removes the heat of combustion supplied to the tubes in which the reaction of the catalyst and feedstock occurs. This makes it possible to place the tubes much closer together with the result that the size of the reformer is radically reduced, to about 25% of a typical steam reformer. Such a reduction brings a number of benefits, not least of which is a large cut in steel costs. BP's process also benefits cost-wise from the fact that it is air-blown, deriving oxygen from air supply and not requiring an expensive air separation unit.

As a consequence, BP says that it foresees an overall F-T plant cost of about $20,000 per b/d (the same as Shell is claiming for its entirely different SMDS process) – which would deliver 10% real returns, selling its products into markets based on crude oil at $14/b.

Boosting US oil supplies

The clincher for the development of F-T GTL in Alaska may lie in the fact that it could bring with it a significant addition to the US' indigenous oil supplies. Prudhoe Bay oil production has halved since its peak of 2mn b/d in 1989. As it declines further, to possibly 200,000–400,000 b/d in a few years time, the operation of the Trans-Alaska oil pipeline to Valdez will cease to be viable.

The hope is that plants to produce synthetic crude could be progressively constructed at Prudhoe Bay to take up the slack in pipeline throughput. If it proves technically possible – which BP believes that it will – the syncrude produced by GTL plants would be converted to diesel and other products which could be batched through the line along with conventional crude. The subject is being extensively investigated both by the oil companies and in a study sponsored by the US DOE. The DOE is particularly keen, seeing the concept as making an important contribution to restraining the future growth of US dependence on foreign oil imports.

Independently of the major oil companies, a separate project is being also proposed by the Alaskan Natural Gas-to-Liquids Company (ANGTL) for a 50,000 b/d F-T GTL plant to utilise the State's royalty gas. The company has proposed Alaskan Government support, including grants, tax credits etc, and for the purpose of participating in the usage of the Trans-Alaskan oil pipeline. It has been talking of collaboration with Mossgas, which operates a 22,000 b/d GTL plant in South Africa. That plant, however, employs an earlier version of one of Sasol's processes – the Synthol process – which yields predominantly gasoline rather than the mainly diesel output that ANGTL appears to be anticipating.

NEW Publications

E-Commerce in the Oil and Gas Industry

Michael R Smith (FT Energy, Maple House, 149 Tottenham Court Road, London W1P 9LL, UK). ISBN 1 8408 3403 X. Price: £445.

This publication provides an overview of how e-commerce applications and business models can apply to the oil and gas sector. It looks at the potential opportunities available to large and small companies within the industry to increase their purchasing power using electronic marketplace exchanges. This information, according to the author, should enable procurement professionals to analyse information in support of critical purchasing decisions. The book evaluates how a company can stay competitive while others in the industry are cutting procurement costs or becoming more streamlined by outsourcing non-core activities, such as computer support or human relations. Although many oil and gas companies are currently in an evaluation and experimental stage in e-commerce, exploring and testing the options will give companies a significant edge when e-commerce takes off.

Petroleum Refining. Volume Four: Materials and Equipment*

Editor: Pierre Trambouze (Editions Technip, 27, rue Ginoux 75737 Paris, Cedex 15, France). ISBN 2 7180 0783 1. 768 pages. Price: FFr 840 ($125).

Since there are numerous and varied pieces of equipment involved in refineries, this publication has grouped them in type categories. Several unit operations are examined: equipment for separating the components of a mixture, either by mass transfer between phases (gas–liquid or liquid–liquid) or by physical separation of multiphase systems, such as gas–liquid, liquid–liquid, gas–solid and liquid–solid mixtures; equipment for achieving heat transfers; reactors; equipment used to accomplish the mechanical operations of fluid transport or mixing; and finally, equipment in charge of controlling all the above-mentioned operations by measuring physical or physiochemical variables with sensors, and using the measurements in control and management systems. This volume draws experts from all fields of the oil industry to present the diverse viewpoints of the different sectors' engineers.

Marine Environment Law*

John H Bates and Charles J W Benson (LLP Professional Publishing, 69–77 Paul Street, London EC2A 4LQ, UK). ISBN 1 8504 4452 8. Price: £375.

This book clearly explains the complicated world of marine environmental legislation, providing relevant, recent and useful information. Other topics discussed include pollution from ships, pipelines and land-based sources, civil liability, the dumping of waste and conservation of marine species.

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Energy Derivatives: Trading Energy Markets*

Peter Fusaro and Jeremy Wilcox (Energy Publishing Enterprises, can be ordered via the Internet at ***www.global-change.com****). ISBN 0 9702 2280 7. 277 pages. Price: $85.*

This book investigates the commoditisation of the emergent energy and ancillary markets, including bandwidth, weather, emissions and coal. E-commerce in the global energy markets and the dynamics of energy market consolidation and convergence are also discussed. Expert contributing authors include Natsource, TFS Energy, Eurobrokers, FSD International and Andersen Consulting.

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- *Oil & Gas Journal Petroleum Software & Technology Guide*. Pennwell Publishing Company, Houston, Texas, UK, 2000.
- *NPN McLean's European Petroleum Equipment*. National Petroleum News (NPN), Arlington Height, Illinois, USA, 2000.

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Four-way ball valve offers crossover capability

Parker Hannifin has launched a new four-way miniature ball valve designed for the crossover control of two fluid streams. A one-piece seat and packing design reportedly eliminates the potential leak path problem that often occurs with the expansion and contraction of individual components found in competitive valves. The valve can also work over a wider temperature range, –54°C to +149°C (–65°F to +300°F). This gives the valve versatility and means it is capable of high-performance routing/directional control of media in chemical, petrochemical, oil, gas and other industrial applications, states the manufacturer.

The seat/packing component is fabricated from PFA (perfluoroalkoxy). This material is highly resistant to wear and inert to most chemical and industrial solvents. Therefore the valve is suitable for use with corrosive fluids and gases and in applications that demand a high level of purity or hygiene, such as in bio-pharm or food processing.

The one-piece design also eliminates dead-space between the valve body and ball that can trap particles or build up deposits. The packing nut can also be adjusted without special tools.

A computer-controlled manufacturing facility allows users flexibility over construction specifications to optimise the valve for particular applications. Options include a choice of integral single- or double-ferrule CPI or A-LOK compression tube connections that can halve potential leak paths and assembly labour requirements compared with conventional products, claims the company. NPT fittings are also available. The valve's handle is made from nylon 6/6, a material that does not become brittle with age. In addition, the engagement from the handle to the stem is a direct 'D' drive, for positive operation.

Tel: +44 (0)1271 313131
Fax: +44 (0)1271 373636

Q8 goes green with new engine oil

Q8 Oils has launched a new engine oil – Q8 T720 – designed to help vehicle manufacturers meet exhaust emission targets required by the new Euro 3 environmental legislation due to come into effect in October 2001.

According to Q8, one of the greatest challenges facing vehicle manufacturers is the reduction of exhaust gases by improvements to the engine combustion process. Many are opting for using higher injection pressures and delayed injection timing. However, Q8 states that 'when using traditional engine oils, these modifications have detrimental side effects, loading the oils with a fine soot that thickens the oil and acts as an abrasive. This ultimately reduces their working life and drain intervals.'

Designed for use with turbo delayed engines operating under tough conditions, the new mineral-based engine oil is claimed to avoid these side effects. It is also said to be capable of staying in grade for extended drain intervals. The company reports that Q8 T720 is suitable for use with the 'full spectrum of vehicle engines, from HGVs to high performance petrol engine passenger cars.'

Tel: +44 (0)113 235 0555
Fax: +44 (0)113 248 9053

Torque, don't torque

Digilog Services has developed a torque tool turns counter system with integrated torque feedback for subsea applications. Electronic circuitry has been used to improve the signal to noise ratio from the strain gauge sensor which, in turn, makes the torque reading more accurate and stable, according to the manufacturer. This is also said to minimise the possibility of damage to subsea equipment due to inadvertent over-torqueing.

The torque tool system incorporates a high-speed (up to 10 kHz) turns counter based on a microcontroller interface. This can detect direction of rotation when used in conjunction with dual pulse quadrature input. It allows the display to show the correct turns even if the direction of the tool is reversed, eliminating, according to the company, the requirements for a manual input of the direction from the control console.

Tel : +44 (0)1224 770898
Fax: +44 (0)1224 770907

NEWS Technology

Motor option dosing pump

The MRoy XA is the new direct mounting motor option pump from Milton Roy. The new model can be retro-fitted into existing process systems as it is fully interchangeable with other models in the MRoy range.

The pump has a maximum capacity of 66 l/h with pressures to 123 bar. It can also withstand temperatures of up to +90°C for metallic liquids or +50°C for plastic liquids.

The pump has a built-in relief valve to prevent damage if the discharge system becomes blocked during operation, and a built-in drain to enable easy priming.

Automatic air-venting maintains the repetitive accuracy and oil-bath lubricants protect the pump's moving parts during heavy duty operations.

Tel: +44 (0)118 977 1066
Fax: +44 (0)118 977 1198

New online petroleum analysers

The new Phase Technology Online cloud, pour and freezing point analysers from Sartec incorporate an innovative design that requires no liquid coolant. The cooling system uses air rather than water as a medium for removing heat from the thermoelectric cooler. Distillate and lubricant samples can be cooled to –40°C using this method. All practical measurements of cloud and pour points can be achieved, with no need for additional refrigeration, liquid coolant or water pipes, states the company.

The new design is claimed not to require any extra consumption of air beyond what is usually used for purging the enclosure. The analyser removes the need for cryogenic units that can often be expensive and large. However, for sample temperatures lower than 40°C, the use of plant water is still recommended to increase the cooling effect.

The system, states Sartec, needs very little maintenance and no calibration.

Tel: +44 (0)7000 727832
Fax: +44 (0)7000 885541

Large bore isolation pressure valves

Anderson Greenwood Instrumentation Products has launched a new range of large bore isolation valves. The new valves are specifically designed for the isolation of pressure measurement instrumentation in severe service applications. They are said to be ideal for use in the power, petroleum, petrochemical and process industries as they can handle temperatures up to 1,200°F and pressures as high as 10,000 psi.

The range includes a metal seated, straight-through hand valve that has the same high flow capacity as gate valves, but with the bubble-tight shut-off characteristics of globe valves.

The soft or metal seats in the range can easily be removed and replaced in situ, eliminating the need for valve removal should the seat become damaged by process conditions or debris.

Tel: +44 (0)161 494 5363
Fax: +44 (0)161 494 5672

Heavy duty hangers

A new range of clothing and equipment hangers designed for industrial usage are now available from dive specialists Sea & Sea. The hangers are constructed from ABS and were originally engineered for diving suits. This makes them extremely robust according to the manufacturer.

Tel: +44 (0)1803 663012
Fax: +44 (0)1803 663003

Pipeline leak monitoring

Krohne has launched the Galileo leak detection system to enable the continuous monitoring, detection and localisation of leaks in liquid and gas process pipelines.

Galileo is a fast and accurate system and can detect even the smallest of leaks, states the company. The typical time for the detection of a leak is one minute, and a further two minutes to localise the leak.

The system is comprised of a master station installed in the control room which records and analyses data from a number of site stations located at various points along the pipeline. An alarm will sound if a leak is found.

Galileo functions by computing a position profile of the pipeline using flow, pressure and temperature measurements to derive a mechanical flow and thermodynamic pipeline model.

Important features include technology that minimises the risk of false alarms, and ensures optimum performance even in unstable conditions such as high/low flows and temperature drifts. This includes compensation for compressibility (line packing) and temperature effects, and an integral sensor monitoring system for evaluating sensor conditions and signal transfer.

Tel: +44 (0)1933 408500
Fax: +44 (0)1933 408501

Real time data collection

Heron Management Services has launched the Antares 2425 CS, a hand held, real time radio frequency data collection device that is certified IS for use in hazardous areas up to the highest class 0 level. Remote data gathering using the Antares connected via a network can, according to the manufacturer, deliver real time data in two directions: updating the data store, and informing the hand held terminal user of any specific requirements for that particular item in real time.
The unit can be used to collect data in manufacturing, distribution, warehouse or underground environments.

Tel: +44 (0)1433 639150
Fax: +44 (0)1433 639310

NEWS Technology

A fresh approach to ship design assessment

Lloyd's Register (LR) has produced a new software product, RulesCalc, for performing rule scantling assessments of ships. Classification requirements can be integrated with the ship design process, helping to reduce structural design and plan approval time.

According to Lloyd's Register, designers will now have a tool which will ensure that designs are correct the first time and will require only the minimum of changes. Only the information required for each task needs to be input to the system. There is no need to to enter a complex data model of the entire ship. The program will also reveal to the user where the structural arrangements have not satisfied LR's requirements, thus illustrating where further work should be concentrated.

The software covers LR's rules for all ship types, and is not limited to examining the longitudinal structure in the midship region. The product also covers machinery calculations for diesel engines, gas turbines, shafting, propellers and gearbox.

RulesCalc can be used early on in the design process because it does not need an entire 3D model of the ship. It can be used as early as the concept design stage and can help improve the accuracy of cost estimates, allowing yards to be more competitive.

The calculation procedure is also fast. Only the minimum amount of data is requested on a spreadsheet type of entry. Alternative designs can be evaluated quickly to assess the impact on the overall ship of varying key factors such as stiffener spacing.

Tel: +44 (0)20 7423 1679
Fax: +44 (0)20 7423 2061

Software tools for data recorders

Eurotherm has introduced a suite of software tools for use with the company's data recorders. Using a standard PC running Windows 95, 98, or NT, engineers will be able to view online live data from a number of remote instruments. Data can be viewed, analysed, stored and transmitted across a variety of possible process applications.

The software consists of PC Chart, PC View and PC Review. PC Chart is a pre-engineered package which provides remote online plant data. A maximum of 75 inputs can be read from single or multiple recorders on the network. Inputs from different instruments can be grouped together for ease of monitoring plant performances.

PC View is a more powerful package and offers up to 300 inputs. Extra displays include a panel indicator module with bar graphs, alarm status and point displays.

PC Review provides chart viewing and printing for offline activity, including remote file transfer. It uses the packed data files from a data recorder's local storage media and imports them into a secure PC database. The chart view module can look at data from one or more archive files.

All three packages feature secure data storage. Data from recorders is logged in binary format, compressed using a proprietary algorithm, encoded and check summed to prevent data tampering.

Tel: +44 (0)1903 268500
Fax: +44 (0)1903 695666

Field device monitor

The new Neles FieldBrowser™ can monitor any field device on a HART network, capture data for computer automated diagnostics, and send alarms via e-mail, Internet, intranet or mobile phone. It can be used with mixed networks, including any manufacturer's digital valves, pressure, temperature and flow transmitters, and any other smart field devices, states Neles.

The system will continuously monitor all smart field devices on a network; capture diagnostic or performance information generated by the device; send alarms when user-selected limits are exceeded; and post all data captured to a comprehensive database. The database can be used by a variety of computer automated diagnostic packages and authorised users can view all the information collected by the system using any web browser. In addition, web pages can be generated to show the condition of every field device on the network.

The FieldBrowser supports open data base connection (ODNBC) interface, allowing data to be shared with analytical software. WAP phones can also access information.

Tel: +358 20 483 150
Fax: +358 20 483 151

If you would like your new product releases to be considered for our Technology News pages, please send the relevant information and pictures to:
Cheryl Saponia
Editorial Assistant, *Petroleum Review*
61 New Cavendish Street, London W1M 8AR, UK

Membership News

NEW MEMBERS

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Mr G Lekberg, Williams Refining LLC
Mr P Lilley, SGS Societe Generale de Surveillance
Mr F Lopez - Caballero, London
Mr J G Martin, Switchgear & Instrumentation Ltd
Mr M R Massey, Surrey
Dr A Millington, Dr J.H. Burgoyne & Partners
Mr P A R Mohan, MALAYSIA
Mr A K Musa, EPNL Elf Exploration and Production, Amenam/Kpono Project
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Mr S Purbey, Bank of America
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Ms E Taupin , Bloomberg L.P
Mr P Tittarelli , Stazione Sperimentale Combustibili
Mr H Wall, London
Mr A R Watson, Strategic Team Maintenance Company Limited
Mr D J Whiting, Essex

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Mr C McDermott, Glasgow
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Mr A Renaud, Aberdeen
Ms C Schieldrop, London
Mr M D Schuetz, London
Mrs C V Simpson, Aberdeen
Ms S Skollerud, London
Mr T Stenberg, London
Mr D D Wilkinson, Aberdeen

IP Discussion Groups & Events

Energy, Economics, Environment

A joint meeting with the British Institute of Energy Economics

'Oil Markets 2000 and Outlook for 2001'

By John Toalster, Société Generale

Thursday 11 January at BP Amoco, Britannic House, London

Contact: Mary Scanlan, BIEE
Tel: +44 (0)20 8997 3707

IP Training Courses 2001 – New Brochure Now Available!

For details of how to obtain your copy please contact
Nick Wilkinson at the IP
Tel: +44 (0)20 7467 7151
Fax: +44 (0)20 7580 2230
e: *nwilkinson@petroleum.co.uk*

IP THE INSTITUTE OF PETROLEUM

Branch Activities

Essex

Contact:	*Arnold Carlson Tel: +44 (0)1268 794615*
10 Jan:	5.30 pm: Independent Cargo Inspection, by A H Edwards
14 Feb:	5.30 pm: AGM, followed by Helium from Natural Gas and its Applications, by Ali Karim and Peter Ward of Linde Gas UK

Humber

Contact:	*Dave Hughes Tel: +44 (0)1469 555237*
1 Feb:	Local Power Station Development

North East

Contact:	*John Sparke Tel: +44 (0)1642 546411*
6 Feb:	7 pm: AGM, followed by presentation on Technical Committees of the Institute of Petroleum, by Brian Abbott, IP Technical Director

Energy, Economics, Environment Discussion Groups

Please notify the contacts if you plan to attend any of the advertised events. All events will take place at the IP unless stated otherwise
Institute of Petroleum, 61 New Cavendish Street, London W1M 8AR, UK
Tel: +44 (0)20 7467 7100 Fax: +44 (0)20 7255 1472
e: jsandrock@petroleum.co.uk

IFEG Information for Energy Group

AGM

The Information for Energy Group Annual General Meeting will take place at the Institute of Petroleum on **Thursday 11 January 2001** at 2pm.

This will be preceded by a buffet lunch at 1pm sponsored by Infield Systems Ltd (**www.infield.com**)

infield

All members and prospective members are welcome

Further information from Sally Ball, IFEG Secretary
Tel: +44 (0) 20 7467 7115
Fax: +44 (0) 20 7255 1472
e: sball@petroleum.co.uk

Calling all IP website surfers!

The redevelopment of the IP website (www.petroleum.co.uk) is now well underway. We are looking for volunteers to test the new site prior to its launch during IP Week in February.

Can you help?

If you are interested in testing the new site and providing feedback, please e:betatester@petroleum.co.uk

Please include you full name, occupation and organisation (if applicable) in your response

Many thanks Webmaster

IP Conferences and Exhibitions

IP Week 2001 – At a glance

Monday 19 February
- Financing the International Oil and Gas Industries: Unique Solutions for Individual Circumstances

Tuesday 20 February
- The Impetus to Adapt – Implementing Strategies for Growth
- When Will e-Business be Just Business?
- Bunkers on the Internet
- Creating Competitive Advantage in European Refining – Examples of Success
- London Branch Evening Discussion Meeting
- Annual Luncheon at The Dorchester Hotel, London

Wednesday 21 February
- Energy and the Environment in the New Millennium
- Price.com – Establishing Oil Price through the Electronic Media

Annual Dinner at The Grosvenor House Hotel, London

Thursday 22 February
- International Conference on Deepwater Exploration and Production

For more information about events running in IP Week 2001, please see the advertisement on the inside back cover or log onto the IP website www.petroleum.co.uk

Forecourt Profitability – A Challenge to European Industry

Birmingham: 13–14 March 2001

For further information please see contact details below.

2nd International Conference and Exhibition on

Offshore Marine Support

Aberdeen, UK: 22–23 May 2001

This Conference will discuss:
- technical and commercial aspects of the marine industries supporting the offshore logistics
- multi-role utilisation of support vessels
- anchor-handling
- special requirements for the marine support of decommissioning platforms
- other non-conventional marine support

For further information please see contact details below.

For further information on any of the above conferences please contact:
The IP Conference Department
Tel: +44 (0)20 7467 7100
Fax: +44 (0)20 7580 2230
e: **cpullen@petroleum.co.uk**
or view the IP Web Page:
www.petroleum.co.uk

IP THE INSTITUTE OF PETROLEUM

New publication

Research Project: Evaluation of the Performance of Meters in Loading Gantries – Phase 1 – Gas Oil Test

This report covers the first phase of a two-phase project being undertaken by SGS Redwood under the sponsorship of the Institute of Petroleum. The project examines the performance of various types of meters in loading gantry installations. During the first phase, a PD meter, a straight-bladed turbine meter, a helically-bladed turbine meter and a Coriolis meter were tested using gas oil.

The most important characteristics of loading gantries (particularly road loading gantries) are that the space available for the meter and its associated components is generally very restricted, and that the batch volumes are relatively small. These characteristics compromise the performance of many types of meter. Phase two of the project will provide valuable information on other products.

ISBN 0 85293 309 6 25% discount for IP Members

Available for sale from Portland Press Ltd at a cost of £20.00 inc. postage in Europe (outside Europe add £5.00). Contact Portland Press Ltd, Commerce Way, Whitehall Industrial Estate, Colchester CO2 8HP, UK.
Tel: +44 (0)1206 796 351. Fax: +44 (0)1206 799 331. e: sales@portlandpress.com

***For a complete and up-to-date listing of all IP Publications see our website:* www.petroleum.co.uk**

EVENTS Forthcoming

DECEMBER 2000

4 London
Dispute Resolution
Details: Christine Pullen, The Institute of Petroleum

8 **Moscow**
Russian Energy Summit – A New Era for Investment
Details: Moscow International Petroleum Club and CWC, UK
Tel: +44 (0)020 7704 6161
Fax: +44 (0)20 7704 8840
e: bookings@thecwcgroup.com
www.mmnk.org

11–12 **London**
Floating Production Systems
Details: IBC Global Conferences, UK
Tel: +44 (0)1932 893851
Fax: +44 (0)1932 893893
e: cust.serv@informa.com
www.ibcglobal.com/ej150

12–13 **Alberta**
Leadership Skills for Supervisors
Details: Petroleum Institute for Continuing Education, Canada
Tel: +403 284 1250
www.peice.com

13 **Alberta**
Introduction to Welding Technology
Details: Petroleum Institute for Continuing Education, Canada
Tel: +403 284 1250
www.peice.com

13–15 **London**
Design of Floating Production Systems
Details: IBC Global Conferences, UK
Tel: +44 (0)1932 893851
Fax: +44 (0)1932 893893
e: cust.serv@informa.com
www.ibcglobal.com/ej154

14–15 London
Custody Transfer of Crude Oil – Trading and Loss Control Issues
Details: Christine Pullen, The Institute of Petroleum

15–17 **Florida**
Underwater Intervention
Details: Marine Technology Society and the Association of Diving Contractors International, USA
Tel: +1 281 893 8539
www.diveweb.com

JANUARY 2001

15–19 **Leeds**
Ultra Low NOx Gas Turbine Combustion
Details: CPD Unit, SPEME, University of Leeds
Tel: +44 (0)113 233 2494
Fax: +44 (0)113 233 2511
e: cpd.speme@leeds.ac.uk
www.leeds.ac.uk

22–23 **Prague**
Czech and Slovak Energy
Details: SMi, UK
Tel: +44 (0)20 7252 2222
Fax: +44 (0)20 7252 2272
www.smi-online.co.uk

22–25 **West Sussex, UK**
The Caspian Region: The Politics of Oil and Gas
Details: Wilton Park Conferences, UK
Tel: +44 (0)1903 817755
Fax: +44 (0)1903 815244
e: fiona.fung@wiltonpark.org.uk

23–26 **London**
Time and Voyage Charter Parties Seminar
Details: Lloyd's List Events, UK
Tel: +44 (0)1932 893961
Fax: +44 (0)1932 893893
e: claire.owen@informa.com
www.lloydslistevents.com

30–31 **London**
Hague–Visby Rules Seminar
Details: Lloyd's List Events, UK
Tel: +44 (0)1932 893961
Fax: +44 (0)1932 893893
e: claire.owen@informa.com
www.lloydslistevents.com

31–1 February **San Diego**
F-Cells: Fuelling the Stationary Power Revolution
Details: IQPC, UK
Tel: +44 (0)20 7368 9300
Fax: +44 (0)20 7368 9303
e: stationaryfcells@iqpc.co.uk
www.iqpc.co.uk

FEBRUARY 2001

5–6 **London**
Liquefied Natural Gas 2001
Details: SMi Energy Conferences, UK
Tel: +44 (0)20 7252 2222
Fax: +44 (0)20 7252 2272
e:customer_services@smiconferences.co.uk

5–8 **Tunis**
1st Oil and Gas North Africa Exhibition and Conference
Details: Spearhead Exhibitions, UK
Tel: +44 (0)20 8949 9222
Fax: +44 (0)20 8949 8186
e: oilandgasnafrica@spearhead.co.uk
www.spearhead.co.uk

12–13 **London**
The Development of Middle East Energy
Details: The Royal Institute of International Affairs
Tel: +44 (0)20 7957 5754
Fax: +44 (0)20 7321 2045
e: gwright@riia.org

14–16 **Singapore**
Land Tank and Shipboard Measurement
Details: Abacus International, UK
Tel: +44 (0)1953 497099
Fax: +44 (0)1953 497098
e: information@abacus-int.com

19–20 **Singapore**
Flow Metering and Meter Proving
Details: Abacus International, UK
Tel: +44 (0)1953 497099
Fax: +44 (0)1953 497098
e: information@abacus-int.com
www.abacus-int.com

19–22 London
IP WEEK
Details: Christine Pullen, The Institute of Petroleum

CALL FOR PAPERS
INTERNATIONAL CONFERENCE

10–12 October 2001 Hamburg
Creating Value from Light Olefins – Production and Conversion
Details: DGMK, Germany in association with AFTP, IP, IRPB and Enerclub
Tel: +49 40 639004 11 and ask for Gisa Tessmer
www.dgmk.de

The conference will address all scientific and technical issues related to the manufacture of ethene, propene, butenes etc. and their conversion into valuable products.

The call for papers is open until 1 April 2001.

MOVES People

Burlington Resources has announced that **Steven Shapiro** has been named Senior Vice President and Chief Financial Officer.

Venezuela's President Hugo Chavez has announced that army **General Gaicaipuro Lameda Montero** is the new President of PdVSA.

Swift Energy has announced a number of promotions. **Joseph D'Amico** is the new Executive Vice President, **Alton Heckaman** the Senior Vice President and Chief Financial Officer and **Terry Swift** the President of Swift Energy International.

Bahrain has appointed Oil and Industry Ministry Undersecretary **Mohammed Saleh Al-Shaikh** as Chairman and Managing Director of state-owned Bahrain Petroleum Company (Bapco). The post has been vacant since the company's merger with Bahrain National Oil Company earlier this year.

Anadarko has promoted **Charles Manley** to Executive Vice President, Administration and **Michael Rose** to Executive Vice President, Finance.

Jim Davis has been named President of the new retail energy service unit, Chevron Energy Solutions.

Alyeska has promoted **Dan Hisey** to Chief Operating Officer. **David Wight** was named President and Chief Executive.

Nguyen Xuan Nham has been named General Director of the Vietnam National Oil and Gas Corporation by the Vietnamese Government, replacing Ngo Thuong San.

GAMBICA, the association for instrumentation, control and automation, has announced the appointment of *James Plenderleith* (right), Managing Director of Moeller Electric, as its President for the year 2001. He is taking over from John Hemming (left).

Timor Sea Petroleum has announced the appointment of **Graeme Alan Menzies** as Director and Chairman of the company. **Simon Donald Mackay** was named a Director.

Senior Advisor at the Center for Strategic and International Studies **Luis Giusti** has been appointed Non-Executive Director of Shell Transport and Trading.

Vladimir Shuverov has been appointed Vice President of Lukoil. He will oversee Lukoil's operations in Eastern European countries.

Chevron, Shell and Schlumberger have signed a Memorandum of Understanding to create OpenSpirit, a company that plans to offer a standardised software infrastructure for the energy industry. **Neil Buckley** will serve as Chief Executive Officer of OpenSpirit. He has more than 12 years of software commercialisation experience in the energy business and is a former President of US operations for Merak, a division of GeoQuest.

***Kevin Jackson* has been named as the new Managing Director of the Severn Group of companies, which encompasses Severn Glocon and Severn Unival. He previously held the post of International Sales and Marketing Director for Severn Glocon.**

PanCanadian Petroelum has appointed **Wesley Twiss** as Executive Vice President and Chief Financial Officer.

Baker Hughes has named Senior Vice President and President of Oil Operations, **Andrew Szescila**, as Chief Operating Officer.
OPC has restructured its Board of Directors. **Piers Johnson** continues as Managing Director while **Anthony Perry** joins as Chairman and **Peter Rutledge** as Business Development Director.

Mike Jonagan has been appointed as Chief Operating Officer at United Energy, a newly created post.

R Hendriks has tendered his resignation as Vice President of the Executive Board of Vopak. The composition of the remaining Executive Board is to remain unchanged until further notice.

Several appointments have ben made at IFP. **Michel Dugert** has been named Industrial Director, **Christain Dupraz** Director of the Refining, Petrochemicals, Gas Processes Division, **Régis Bonifay** Director of the Process Division and **Albert Le Corre** Director of the Client Services Division.

ShipIQ, the online Internet site that plans to provide end-to-end shipping logistics to the oil industry has named **Hans Peter Westfal-Larsen** to Vice President of Chartering Services. He will work directly with ship owners and brokers during online transactions.

Ultramar Diamond Shamrock's board has elected **Todd Walker** as its Corporate Secretary.

Nikolai Tokarev, the former Vice President of Transneft has been appointed Director General of the unitary enterprise Zarubezhneft. **Oleg Popov**, the former Director General of Zarubzhneft has taken the post of Tokarev's First Deputy.

Lloyd's Register has appointed **Geoff Thomas** as its new Director of Human Resources. He succeeds **David Littlejohn** who moves to a senior position in the organisation's publications area. **Stephen Hand** has also been appointed as Group Director of Information Technology.

Jeffrey Bender has been named Vice President of Human Resources at Apache.

Vyacheslav Nunyaykin, Chief Engineer of the Nizhnevartovsk oil producing enterprise has been appointed General Director of Samotlorneftegaz.

Centrica has appointed **Mark Clare** to the newly created post of Deputy Chief Executive responsible for financial services and e-commerce.

The Board of LOGIC (Leading Oil and Gas Industry Competitiveness) has elected **Clive Fowler** as its new Chairman. The appointment follows the departure of Al Bolea, now at BP.

IP THE INSTITUTE OF PETROLEUM

IP Week 2001

London: 19–22 February

The Institute of Petroleum's 'IP Week' is the focal point in Europe each year when leading figures in the oil and gas industry travel to London for an intensive round of conferences, industry and trade association events, company meetings and social functions. The Institute's own programme of events forms the core of these activities.

The programme of events will include:

Monday: 19 February

International Finance Conference

Tuesday: 20 February

Seminar in cooperation with the International Bunker Industry Association

IBIA
THE INTERNATIONAL BUNKER INDUSTRY ASSOCIATION

Seminar in cooperation with Wood Mackenzie

WOOD MACKENZIE
global consultants

Seminar in cooperation with Cambridge Management Consulting

Cambridge Management Consulting
BUILDING THE NEW ECONOMY

Seminar in cooperation with Andersen Consulting

Andersen Consulting

IP Annual Luncheon held at the Dorchester Hotel

Wednesday: 21 February

14th Oil Price Seminar organised in cooperation with New York Mercantile Exchange

New York Mercantile Exchange
NYMEX/COMEX. Two divisions, one marketplace

Seminar in cooperation with the International Petroleum Industry Environmental Conservation Association

IPIECA

IP Annual Dinner held at the Grosvenor House Hotel

Thursday: 22 February

International Conference in cooperation with the International Association of Oil and Gas Producers (formerly E&P Forum)

OGP
International Association of Oil & Gas Producers
formerly E&P Forum

For a copy of the complete programme of events, please contact:

Conference Department,
Institute of Petroleum, 61 New Cavendish Street,
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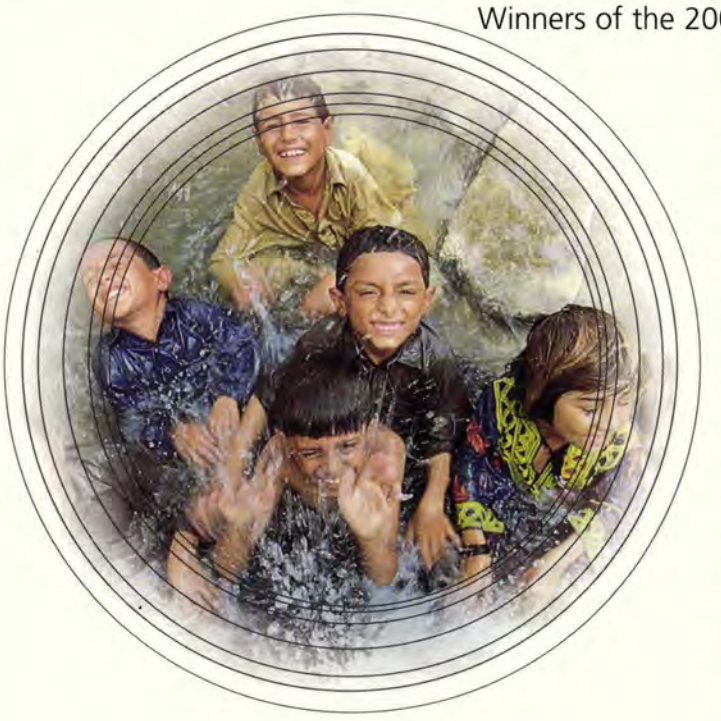
Email: **cpullen@petroleum.co.uk**

or view the IP web site: www.petroleum.co.uk

Congratulations to Unocal!

Winners of the 2000 IP community initiative award



At LASMO we believe that a positive contribution to local communities is key to sustainable business success. We encourage and support this outlook in companies and individuals and are delighted to help bring recognition to the achievements of our industry.

Which is why we have sponsored the IP Community Initiative Award.

The award acknowledges the best new initiative to benefit the community. This year's winner is Unocal Corporation for 'Community Outreach 2000', bringing healthcare, education and development assistance to thousands of people in Bangladesh.

LASMO would also like to congratulate all the companies that entered this year's award for their impressive efforts. We look forward to continuation of the significant advances our industry is making in environmental and community performance.

We demonstrated our own commitment to continual improvement with the publication of our first external review of progress entitled 'Investing in the Future – LASMO environmental and social review 1998–1999'. This includes an overview of our community work in Pakistan for which we received an honourable mention at the IP award ceremony. It is available from the reports section of our website: www.lasmo.com

For further details about the IP awards visit www.ipawards.com

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